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PhD Thesis

Pharmacy-based Sexual and Reproductive Health Services

A Mixed Methods Evaluation

MS JULIA GAULY

A thesis submitted for the degree of Doctor of Philosophy in Health Sciences

University of Warwick, Warwick Medical School, Department of Health Sciences

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Declaration

This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy. It has been composed by myself and has not been submitted in any previous application for any degree.

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Dissemination and publications

Journals

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Conferences

Poster Presentation at BASHH (British Association for Sexual Health and HIV) Conference 2019, (Birmingham, UK): *"Experiences and perspectives of pharmacy staff and users on the delivery and impact of pharmacy-based sexual health services: a systematic review."*

Oral Presentation at the IUSTI (The International Union against Sexually Transmitted Infections) Conference 2019, (Shanghai, China): "*Uptake, usage and user demographics of pharmacy-based sexual health services: A retrospective study from the UK"*

Abstract

Objective

Limited financial resources and an increase in demand for access present challenges to policy makers wishing to address people's need for sexual and reproductive health services (SRHS). The potential of pharmacies to take pressure off healthcare systems and deliver SRHS is being increasingly recognised. The aim of this PhD project was to explore the attitudes, experiences and utilisation of pharmacy-based SRHS to develop recommendations for service optimisation.

Methods

A mixed methods approach was used. A retrospective quantitative study was conducted to describe the utilisation of a large range of SRHS delivered through the health provider *Umbrella* in Birmingham (England). A systematic review was carried out to summarise what is known about pharmacy users' and staff experiences of SRHS. Qualitative semi-structured interviews were conducted with pharmacy staff and pharmacy users to explore their experiences with pharmacy-based SRHS in Birmingham. The results of all three studies were synthesised and recommendations developed based on the discussion of the integrated findings.

Results

People using the pharmacy for SRHS found pharmacies convenient to use and overall had a positive experience interacting with pharmacy staff. However, key barriers to access included not being able to access pharmacy staff of the preferred sex, not having staff trained in SRHS delivery available, a lack of privacy at the counter, difficulties with self-sampling kits testing for sexually transmitted infections, and a lack of awareness for services. While pharmacy staff were generally motivated to deliver SRHS, added workload was experienced as stressful, particularly when staffing levels were low.

Conclusion

The thesis developed recommendations on the optimisation of pharmacy-based SRHS. Barriers to access and usability need to be addressed in order to exploit pharmacies' full potential. The thesis developed recommendations on the optimisation of pharmacy-based SRHS, some of which are relevant to pharmacy services in general.

GLOSSARY

AIDS	Acquired Immune Deficiency Syndrome
cART	Combination Antiretroviral Therapy
CCG	Clinical Commissioning Group
COC	Combined Oral Contraception
EC	Emergency Contraception
ECP	Emergency Contraceptive Pill
EHC	Emergency Hormonal Contraception
GP	General Practice / General Practitioner
HIV	Human Immunodeficiency Virus
IRAS	Integrated Research Application System
LES(s)	Local Enhanced Service(s)
MSM	Men Who Have Sex With Men
NAAT	Nucleic Acid Amplification Test
NES(s)	National Enhanced Service(s)
NHS	National Health System
NPT	Normalisation Process Theory
PGD	Patient Group Direction
PHA	Pharmacy Healthcare Assistant(s)
PHE	Public Health England
PIP	Pillar Integration Process
POP	Progesterone-Only Pill
PrEP	Pre-Exposure Prophylaxis
SRH	Sexual and Reproductive Health
SRHS	Sexual and Reproductive Health Service(s)
STI(s)	Sexually Transmitted Infection(s)
UK	United Kingdom
US(A)	United States of America
WHO	World Health Organisation

1. Introduction

1.1. Chapter overview

The research conducted for this PhD project was based at Warwick Medical School in Coventry (West Midlands, England) and was funded by *Umbrella* which is part of the University Hospitals Birmingham NHS Foundation Trust. More information about *Umbrella* is provided in a later section of this chapter (section 1.7).

The introduction serves to provide the reader with important background information to understand the context of the current PhD thesis. It starts by explaining what is meant by sexual and reproductive health (SRH), and sexual and reproductive health services (SRHS) in general. It also outlines how SRH and SRHS are defined for the current thesis. Thereafter, the importance of services related to contraception and sexually transmitted infections, two areas of SRH, is demonstrated. It then explains how SRHS are commissioned in general, with a focus on services in England. Subsequently, the pharmacy service and funder of this project *Umbrella* is introduced and an overview of all their pharmacy-based SRHS provided. Next, the focus of this PhD project is outlined and the aims and objectives of this thesis presented. Following this, an overview of the thesis structure and the research design is presented. Finally, the research team members who supported the conduct of this project are introduced. The chapter closes with a brief chapter summary.

1.2. Sexual and reproductive health and related services

Definitions for terms such as SRH are important to ensure a collective understanding of the term when discussing it (W. M. Edwards & Coleman, 2004). The first internationally accepted definition of sexual health was published by the World Health Organisation (WHO) in 1975 (W. M. Edwards & Coleman, 2004). It was based on the generic definition of health which was developed by the WHO after World War II (W. M. Edwards & Coleman, 2004). Almost twenty years later in 1994, reproductive health was first defined at the International Conference on Population and Development in Cairo (Cottingham et al., 2019). While the usage of the term reproductive and sexual health was proposed at this conference in Cairo, the term “sexual” was dropped due to objections from many governments. Although sexual health has unique aspects, it is closely linked to and overlaps with reproductive health (Viner et al., 2012). Recently, Starrs et al. (2018) developed an integrated and comprehensive definition of SRH and sexual and reproductive rights, which is presented in Figure 1.

Sexual and reproductive health is a state of physical, emotional, mental, and social wellbeing in relation to all aspects of sexuality and reproduction, not merely the absence of disease, dysfunction, or infirmity. Therefore, a positive approach to sexuality and reproduction should recognise the part played by pleasurable sexual relationships, trust, and communication in the promotion of self-esteem and overall wellbeing. All individuals have a right to make decisions governing their bodies and to access services that support that right. Achievement of sexual and reproductive health relies on the realisation of sexual and reproductive rights, which are based on the human rights of all individuals to:

- have their bodily integrity, privacy, and personal autonomy respected;
- freely define their own sexuality, including sexual orientation and gender identity and expression;
- decide whether and when to be sexually active;
- choose their sexual partners;
- have safe and pleasurable sexual experiences;
- decide whether, when, and whom to marry;
- decide whether, when, and by what means to have a child or children, and how many children to have;
- have access over their lifetimes to the information, resources, services, and support necessary to achieve all the above, free from discrimination, coercion, exploitation, and violence.

FIGURE 1 DEFINITION OF SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS BY STARR ET AL. (STARRS ET AL., 2018, P. 2646)

Starrs et. al. also developed a comprehensive definition of essential SRHS which are needed to meet public health and human rights standards (Starrs et al., 2018). The essential services recommended by Starrs et al. are presented in Figure 2.

The sexual and reproductive health services should include:

- accurate information and counselling on sexual and reproductive health, including evidence-based, comprehensive sexuality education;
- information, counselling, and care related to sexual function and satisfaction;
- prevention, detection, and management of sexual and gender-based violence and coercion;
- a choice of safe and effective contraceptive methods;
- safe and effective antenatal, childbirth, and postnatal care;
- safe and effective abortion services and care;
- prevention, management, and treatment of infertility;
- prevention, detection, and treatment of sexually transmitted infections, including HIV, and of reproductive tract infections; and
- prevention, detection, and treatment of reproductive cancers

FIGURE 2 ESSENTIAL SEXUAL AND REPRODUCTIVE HEALTH SERVICES (STARRS ET AL., 2018, P. 2646)

Starrs et al. (2018) definition shows that SRHS comprise many different areas. As not all of these SRHS are focussed on in this PhD thesis, the next section will outline how SRHS are defined for the current PhD project.

1.3. Definition of Sexual and reproductive health services for this thesis

The previous section has shown that SRHS encompass many different components. However, the current PhD project will only focus on those SRHS relating to the "prevention, detection, and treatment of sexually transmitted infections" (STIs) and "safe and effective contraceptive methods".

More specifically, the following services which relate to the prevention, detection and treatment of STIs will be explored: condoms, chlamydia treatment and self-sampling kits testing for five different STIs (chlamydia, gonorrhoea, syphilis, HIV and hepatitis B).

With regards to "safe and effective contraceptive methods", the following services will be explored: condoms, ongoing contraception (progesterone-only-pill and combined pill; contraceptive injection), hormonal emergency contraception (emergency contraceptive pills) and non-hormonal emergency contraception (copper coil).

An overview of the services defined as SRHS for this thesis is presented in Table 1.

The range of services explored in this thesis was defined by the services that *Umbrella*, a sexual health provider in Birmingham (England), currently provides through pharmacies (as of 2020). The rationale for defining the range of services to match *Umbrella's* pharmacy services is justified at a later point (section 1.7), where *Umbrella* and its services are introduced more thoroughly.

TABLE 1 DEFINITION OF SEXUAL AND REPRODUCTIVE HEALTH SERVICES FOR THIS PHD THESIS

Definition of sexual and reproductive health services for this PhD thesis	
Services related to the prevention, detection, and treatment of STI	
Services related to the prevention of STIs	• Condoms
Services related to the detection of STIs	• STI self-sampling kits testing for five different STIs: chlamydia, gonorrhoea, syphilis, Human Immunodeficiency Viruses (HIV), hepatitis B
Services related to the treatment of STI	• Chlamydia treatment
Services related to contraception	
Safe and effective contraceptive methods	• Condoms • Ongoing contraception (progesterone-only-pill and combined pill; contraceptive injection) • Hormonal emergency contraception (emergency contraceptive pill) • Non-hormonal emergency contraception (copper coil)

The next section outlines why services related to safe and effective contraception and services related to the prevention, detection and treatment of STIs are important. Since the field work for this PhD project was conducted in England, evidence on the importance of contraception and STI services from England will be provided alongside global figures.

1.4. Importance of services related to contraception and STI

SRH is an important part of both individual health and well-being but also an important aspect of public health (Henry, 2019). Although improvement in both individual and public health outcomes associated with SRH have been observed (Henry, 2019), many challenges related to SRH remain. This is demonstrated in the following section.

1.4.1. Importance of services related to contraception

Contraceptives are ways to prevent pregnancy and there are many different methods of contraception available. Rates of unmet need for contraception, unintended pregnancy and unsafe abortion are high (Viner et al., 2012). According to data from 41 countries, between 20% and 25% of married adolescents have an unmet need for contraception (Barroso, 2014). Furthermore, an estimated 44% of all pregnancies worldwide are unintended and about 45% of abortions between 2010 and 2014 were unsafe (Starrs et al., 2018). This is problematic, as unintended pregnancies have been shown to lead to poor mental health outcomes in later life (Herd et al., 2016). It is also associated with death or significant morbidity following childbirth (L. Michie & Cameron, 2020). Further, where the termination of unintended pregnancy is done by untrained and unauthorised people, it can have disastrous outcomes. According to the WHO, every eight minutes a woman from one of the developing nations will die of complications of an unsafe abortion (Akpanekpo et al., 2017). Moreover, stigma associated with abortions can lead to diminished well-being of women (O'Donnell et al., 2018).

It is estimated that more than 200 million women who want to avoid pregnancy do not use modern high-quality contraception (Starrs et al., 2018), defined as "a product or medical procedure that interferes with reproduction from acts of sexual intercourse" (Hubacher & Trussell, 2015, p. 420). Instead, many women around the world rely on non-modern contraceptives such as abstinence, withdrawal, fertility awareness approaches or lactational amenorrhea (Hubacher & Trussell, 2015).

In the United Kingdom (UK), unintended pregnancies are estimated to have cost health services more than £1 billion in 2011 (C. M. Thomas & Cameron, 2013). Further, young English people between 15 and 25 years continue to have poor sexual health including inconsistent contraceptive use (Aranda et al., 2018) and although abortion rates have started to fall in the UK, the use of effective contraception to prevent unintended pregnancy remains a challenge (Aranda et al., 2018).

1.4.2. Importance of services related to STIs

STIs affect the health and lives of people worldwide (Rowley et al., 2019). The WHO estimated that 376 million new curable STIs occurred in 2016 alone (M. M. Taylor & Wi, 2019) and that one million new urogenital STIs are acquired each day worldwide (Stulpin & Marrazzo, 2019).

STI numbers are also increasing in England (Aranda et al., 2018). In 2018, there were 447,694 new diagnoses of STIs made in England, which was a 5% increase since 2017 (Public Health England, 2018). This would suggest that this is a growing problem, that needs to be addressed.

There are more than 30 bacteria, viruses and parasites that spread through sexual contact (Newman et al., 2015; Starrs et al., 2018). Of these the following five: HIV, chlamydia, gonorrhoea, syphilis, and hepatitis B are outlined in more detail as they are relevant to this thesis. A bacterial cure is possible with syphilis, gonorrhoea and chlamydia. With HIV and hepatis B a viral cure is not possible – however, early prevention can halt the disease progression and will favour a better quality of life (Starrs et al., 2018).

Human immunodeficiency virus (HIV)

The epidemic caused by the human immunodeficiency virus (HIV), was first recognised in the United States of America (USA) in the early 1980s and shortly after throughout the world (Wing, 2016).

HIV can be transmitted through sexual intercourse and through blood. In three quarters of all cases, HIV is transmitted through intercourse between men and women (Basavarajaiah & Murthy, 2020). It can also be transmitted from mother to child during the pregnancy and delivery and through breastfeeding (Basavarajaiah & Murthy, 2020). HIV can lead to Acquired Immune Deficiency Syndrome (AIDS). This is the stage of HIV where the immune system becomes too weak to fight off certain infections and cancers. Although HIV can be prevented by the use of condoms and by taking pre-exposure prophylaxis (PreP) (J. Jones et al., 2019), nearly two million people worldwide become infected with HIV every year (Starrs et al., 2018). As of 2017, 36.9 million people were estimated to be living with HIV worldwide (Bbosa et al., 2019). The majority of these infections were in sub-Saharan Africa (Bbosa et al., 2019). However, recent research has shown that Eastern Europe and Central Asia (EECA) are the only regions worldwide where annual HIV infections rates are growing (Pape, 2019).

Since no curative therapy is available, HIV remains a lifelong infection (J. Jones et al., 2019). However, the introduction of combination antiretroviral therapy (cART), which first became available in the 1990s (Wing, 2016), has been one of the great public health successes (Katz & Maughan-Brown, 2017). It has led to increased survival in people living with HIV and shown to be effective in reducing viral loads and extending the life span of people living with HIV (M. T. May et al., 2014).

The importance of providing services to address the HIV epidemic is recognised by the United Nations, who have set a goal to end the AIDS epidemic by 2030 (J. Jones et al., 2019). Despite significant progress in controlling the epidemic and saving lives over the past two decades, HIV remains a major public health threat (Starrs et al., 2018).

Moreover, further highlighting the importance of providing appropriate provision for SRHS, in the UK, the life expectancy for HIV-positive individuals treated with cART improved by 16 years between 1996 and 2008 (M. May et al., 2011). Most patients with HIV treated with cART live with their disease successfully (Wing, 2016). However, the mortality figures and life expectancy of people with HIV is driven by many factors including achieving effective virological suppression and the stage of disease at diagnosis (Wing, 2016).

In the UK, the decline in annual number of new HIV diagnoses has continued, with 4453 people diagnosed in 2018 (Public Health England, 2019). This is a 6% decline from previous year (2017) in which 4761 new HIV diagnoses were made (Public Health England, 2019). However, it is estimated that there are more than 100,000 people living with HIV in the UK (as of 2018) and 473 deaths among people living with HIV have been recorded in 2018 (Public Health England, 2019). A problem with reducing the spread of HIV is that many people are unaware of their infection (S. Bell et al., 2019). It is estimated that there are more than 13,000 people living with HIV without knowing it in the UK (Kirwan et al., 2016).

Chlamydia

Chlamydia trachomatis is the leading cause of bacterial STIs worldwide (Filardo et al., 2019) and the most common bacterial STI in the UK (Draeger, 2019a). There are more than 130 million cases per year worldwide (Newman et al., 2015) and more than 200,000 new diagnoses in 2017 in England (Draeger, 2019a).

Chlamydia trachomatis is transmitted primarily through penetrative sex (Draeger, 2019a) but can also be transmitted during pregnancy or delivery (Rowley et al., 2019). It infects the urethra and endocervix (Draeger, 2019a). Acute chlamydia urogenital tract infections are often asymptomatic in both women and men (Draeger, 2019a). However, they commonly have a deleterious effect on the reproductive health of men and women and is associated with subfertility, ectopic pregnancy, and chronic pain (Grillo‐Ardila et al., 2020; Schuchardt & Rupp, 2018). Chlamydia can also infect the throat and the rectum, and in some cases the surface of the eye (the conjunctiva) (Draeger, 2019a). It is highly infectious, with a concordance of up to 75% between sexual partners (Draeger, 2019a).

Gonorrhoea

The bacterium *Neisseria gonorrhoea*e causes the STI called gonorrhoea (Unemo et al., 2019). It is estimated that there are 86.9 million adults infected with gonorrhoea worldwide (Unemo et al., 2019) and the rates are rising particularly among men who have sex with men (MSM) (WHO Department of Reproductive Health and Research, 2018).

Gonorrhoea rates have been rising in England, with a 26% increase in reported infections between 2017 and 2018, when 56,259 cases were recorded (Draeger, 2019b). This is the highest number of cases since 1978 (Draeger, 2019b). Gonorrhoea is nowadays the second most common bacterial STI diagnosed in England (O'Brien et al., 2018). Not only globally but also in England, this is driven by infections by MSM. Between 2008 and 2017, the number of gonorrhoea diagnoses in MSM in England increased eight fold (Whittles et al., 2019).

Gonorrhoea can present as urethritis in men, cervicitis and urethritis in women and can also occur in extragenital sites such as pharynx, rectum, conjunctiva and rarely systematically, in both women and men (Unemo et al., 2019). There is no gonococcal vaccine available, which is why preventing and detecting gonorrhoea is highly important (Unemo et al., 2019). Single-dose systemic therapy with an injectable ceftriaxone plus oral azithromycin, is the recommended first-line treatment (Unemo et al., 2019). However, a major public health concern worldwide is that *Neisseria gonorrhoeae* is becoming more antimicrobial resistant (AMR) (Unemo et al., 2019). This poses a threat to the effectiveness of available gonorrhoea treatment (Unemo et al., 2019). Due to the global spread of resistance to every antibiotic historically used against it, the WHO has classified *Neisseria gonorrhoeae* as a priority bacterial pathogen (Whittles et al., 2019). The remaining treatment, ceftriaxone, is now the first and last line treatment, with worrying signs that it may also fail to treat gonorrhoea soon (Eyre et al., 2018; Fifer et al., 2016).

Syphilis

Syphilis is a chronic bacterial infection caused by the spirochaete bacterium *Treponema pallidum* (Hook, 2017). It is estimated that there are 18 million people infected with syphilis worldwide and that there are 5.6 million new cases per year (Lithgow & Cameron, 2017). In England, the number of syphilis cases has increased between 2016 and 2017 by 20% (from 5955 to 7137 infections) (Iacobucci, 2018).

Syphilis is endemic in low-income countries and occurs at lower rates in middle-income and high-income countries (Hook, 2017). In addition to its direct morbidity, it can increase the risk of HIV infection and cause long-term morbidity in children born to infected mothers (Hook, 2017). It is estimated that 1.36 million pregnant women are infected with syphilis worldwide each year, with more than 500,000 of these pregnancies resulting in adverse outcomes (Lithgow & Cameron, 2017). Syphilis can lead to stillbirth, neonatal death, premature delivery or severe disability (Rowley et al., 2019).

If left untreated, syphilis can progress through a series of clinical stages and lead to irreversible neurological or cardiovascular complications in adults (Hook, 2017). It is an ancient disease that has been recognised by clinicians and the public for hundreds of years. Principles of management have been established for many decades. However, it still remains a challenge.

In Western Europe and North America, disease rates have been fluctuating periodically. Over the past decade, the incidence of syphilis has increased dramatically in MSM, particularly in those with coexistent HIV infection (Hook, 2017), living in western Europe and North America. The main drug recommended for syphilis is penicillin. Treatment for patients who cannot receive penicillin and management of patients who do not have an adequate serological response to treatment are common clinical problems (Hook, 2017). To date, there is no syphilis vaccine available and with only one main treatment, preventing, detecting and treating syphilis is highly important (Lithgow & Cameron, 2017).

Hepatitis B

Hepatitis B is one of the most common viral liver infections (Davitkov & Falck-Ytter, 2019). Over 257 million people worldwide are chronically infected with the hepatitis B virus and it is estimated that there are four million acute cases per year (Davitkov & Falck-Ytter, 2019) and that one million people die from hepatitis B each year (Davitkov & Falck-Ytter, 2019).

Hepatitis B can cause chronic hepatitis and cirrhosis. Further, chronic hepatitis B causes almost 40% of cases of hepatocellular carcinoma (Stanaway et al., 2016). Hepatocellular carcinoma is a common primary liver cancer and a leading cause of cancer-related mortality worldwide (Balogh et al., 2016).

Hepatitis B can be transmitted through infected blood, sexual intercourse and mother-to-child transmission. There is no virological cure for hepatitis B (Razavi-Shearer et al., 2018). However, existing therapies can control viral replication, an effective vaccine is available and prophylaxis can minimise mother-to-child transmission making elimination of hepatitis B feasible (Razavi-Shearer et al., 2018). People with chronic hepatitis B may require long-term or lifelong therapy (Lok et al., 2017).

The WHO has recommended vaccinating children for hepatitis B since the 1990s (Yang et al., 2016). Since then, many countries have gradually adopted national immunisation programs (Yang et al., 2016). The hepatitis B vaccination, if used for primary prevention, can significantly lower the risk of infection (Yang et al., 2016). Nevertheless, a large proportion of adult populations remain unvaccinated (Yang et al., 2016). Another problem with hepatitis B is that most individuals with chronic hepatitis B are asymptomatic and ignorant of their infection status (Yang et al., 2016).

1.5. Provision and commissioning of contraception and STI services

The previous section illustrated that sexual and reproductive health is a major public health concern and highlighted the importance of services related to contraception and STIs. This section focuses on the provision and commissioning of SRHS. Although a global perspective will be provided, the focus will be on the commissioning of SRHS in England, where the field work for the current PhD was conducted.

1.5.1. Global perspective

The burden of sexual and reproductive ill health can only be reduced if access to affordable services that deliver high-quality SRH care becomes universal (Glasier et al., 2006). Whether SRH needs are addressed depends on several factors including societal attitudes but also on legal and policy safeguards that ensure people's access to the information and services they need (Cottingham et al., 2019).

In 1994, world leaders agreed to provide universal access to reproductive health services by 2015 as part of a package for improvement of people's health and wellbeing, reduction of population growth, and promotion of sustainable development (Glasier et al., 2006). Although universal access has not been achieved there has been momentum in implementing SRHS in many countries around the world (Mazur et al., 2018). For example, over the past three decades, many countries have implemented family planning services (Askew & Berer, 2003). The services have been relatively well-financed and supported by high levels of expertise (Askew & Berer, 2003). The declining level of unwanted childbearing worldwide has been largely attributed to these services (Askew & Berer, 2003). The investments in family planning services have successfully led to an increase in contraceptive use in many countries (Glasier et al., 2008).

However, there is still resistance to provide SRHS in many parts of the world (Cottingham et al., 2019) and many people have insufficient access to a full set of SRHS, and their sexual and reproductive rights are not respected or protected in many countries (Starrs et al., 2018). It is estimated that 4.3 billion people of reproductive age worldwide will experience inadequate SRHS in their life (Starrs et al., 2018).

1.5.2. Perspective from England (UK)

Commissioning is the planning and purchasing of services to meet the needs of the population (I. F. Walker et al., 2016). In England, recent changes in commissioning arrangements for SRHS have been made and are documented in the Health and Social Care Act of 2012 (I. F. Walker et al., 2016). These changes resulted in a reduction in the overall budget for SRHS provision in many parts of the country (Ashby et al., 2019). The provision of SRHS is relatively expensive with about a fifth of the public health spend, about £600 million, being used for contraception services and services related to STI (White, 2017). In total, 18% of the budget for sexual and reproductive health services have been cut between 2014-15 and 2018-19 (Finch, 2018).

Since 2013, most SRHS are now provided by local authorities and clinical commissioning groups (CCGs). Charity and voluntary sector organisations are also involved in the delivery of some SRHS (Aranda et al., 2018). Hence, the commissioning of SRHS in England is highly complex.

Local authorities take responsibility for planning, purchasing and monitoring most SRHS including the prevention and testing for HIV and the testing and treatment of sexually transmitted infections, including the National Chlamydia Screening Programme, and contraception (Ashby et al., 2019;

D. of Health, 2013; I. F. Walker et al., 2016). However, HIV treatment services are commissioned separately by NHS England and abortion services are commissioned by General Practitioner-led CCGs (S. Walker et al., 2016). Local authorities are also responsible for organising partner notification, an important part of STI management (Hind, 2013). Partner notification involves actively contacting all sexual partners of patients who test positive for an STI. The way in which partner notification or contact tracing is conducted largely varies in practice, ranging from brief advice to infected people to inform their sexual partners to more robust service provider-initiated tracking and tracing (G. Bell & Potterat, 2011). Table 2 provides an overview of the commissioning responsibilities of SRHS in England (from April 2013) (Hind, 2013).

While regulations require local authorities to provide SRHS, they are free to decide how the services should be provided (Hind, 2013). There are no regulations on the number of services a local authority should have in an area, opening hours, waiting times, staffing levels, where services are located, whether services are walk-in or appointment only and which providers should be commissioned to provide which services (Hind, 2013).

The changes in the delivery of SRHS has been challenging for local authorities but also provided a unique opportunity for SRHS to be re-designed and further developed (I. F. Walker et al., 2016). For example, STI testing and treatment and contraception used to be available in different settings but in many areas these services have become integrated meaning that people only need to visit one site for their SRHS (D. of Health, 2013; PHE & DH, 2018). Policymakers hoped that the integration of SRHS would improve patient outcomes, while also being more cost-effective for commissioners (D. of Health, 2013).

With local authorities now procuring SRHS using tender processes (Ashby et al., 2019) many different providers have become involved in providing SRHS including: general practices, dedicated sexual health clinics, social enterprises, community interest companies (COC) and pharmacies.

In summary, this section showed that the commissioning and provision of SRHS varies across countries. In England, local authorities are responsible for commissioning most SRHS and deliver the services through different health providers including pharmacies.

The next section provides an introduction into pharmacies and their role in the provision of SRHS.

TABLE 2 SEXUAL AND REPRODUCTIVE HEALTH COMMISSIONING RESPONSIBILITIES SINCE APRIL 2013 (HIND, 2013, P. 17)

Commissioning of sexual and reproductive health services in England	
Local authorities commission	• Comprehensive sexual health services, including: contraception, including LESs (implants) and NESs (intrauterine contraception) including all prescribing costs – but excluding contraception provided as an additional service under the GP contract • STI testing and treatment, chlamydia testing as part of the National Chlamydia Screening Programme and HIV testing; notification of sexual partners of infections persons • Sexual health aspects of psychosexual counselling • Any sexual health specialist services, including young people's sexual health and teenage pregnancy services, outreach, HIV prevention and sexual health promotion work, services in schools, colleges and pharmacies
Clinical Commissioning Groups Commission	• Most abortion services • Sterilisation • Vasectomy • Non-sexual health elements of psychosexual health services • Gynaecology, including any use of contraception for non-contraceptive purposes.
The NHS Commissioning Board commissions	• Contraception provided as an additional service under the GP contract • HIV treatment and care, including post-exposure prophylaxis after sexual exposure • Promotion of opportunistic testing and treatment for STIs, and patient requested testing by GPs • Sexual health elements of prison health services • Sexual Assault Referral Centres • Cervical screening • Specialist foetal medicine

1.6. Pharmacies and their role in the provision of sexual and reproductive health services

The practice of pharmacy as it is known today dates back to the 18th century (Meyerson et al., 2013). A pharmacy is not simply a drug store but a place where licensed pharmacists oversee the dispensing of medicines after receiving a valid prescription or drug order by a legal prescriber (Kelly, 2018). Pharmacies directly serve the public (Meyerson et al., 2013) and have the purpose to help patients to make the best use of their medication (Kelly, 2018). Pharmacies can be independent or chains and be freestanding buildings (pharmacy stores) or be located in other places such as chemists, supermarkets, medical buildings and hospitals (Goode et al., 2019; Kelly, 2018; Meyerson et al., 2013).

This thesis focuses on community pharmacies which serve the general public, in contrast to hospital pharmacies which mainly deal with inpatients. Community pharmacies are the most visited health-care destination and community pharmacists are the third largest health care professional group after physicians and nurses. In England, a four year Master of Pharmacy course and one pre-registration year with a registration examination set by the General Pharmaceutical Council are required to become a pharmacist (Altman et al., 2018). Pharmacists are registered by a board of pharmacy (Kelly, 2018).

According to data from NHS digital, there were more than 11,500 pharmacies in England between 2018 and 2019 (NHS Digital, 2020). Pharmacies offer accessibility, expertise in therapeutics, face-to-face contact and skills in managing drug problems and adherence (Nazar et al., 2015). They are widely distributed covering a wide variety of geographical areas, often in areas of highest deprivation, and many have long opening hours (T. J. Brown et al., 2016). They also offer anonymity and have the potential to reach those in greatest need. Hence, pharmacy access can help overcome barriers for people who do not want to or cannot access services from other health care providers (Gonsalves & Hindin, 2017). Pharmacy-based services therefore may help to address socioeconomic inequalities (T. J. Brown et al., 2016).

Pharmacies have been seen as underutilised and policymakers have started to recognise the importance of extending pharmacy staff roles to meet growing health-care demands. Several countries including Australia, Canada, New Zealand and the United States are funding public health services in pharmacies (Ali M.K. Hindi et al., 2018). Recent policies aim to extend pharmacists' practice (Altman et al., 2018) beyond dispensing into more clinical and patient-centred roles (Altman et al., 2018). The expansion of pharmacists' role has been promoted by the WHO (Goode et al., 2019).

Although there is a trend for pharmacists to take on a bigger role in the provision of care, the expansion of pharmacists into public health roles has developed inconsistently and the provision of services delivered by community pharmacies vary widely by country and even within countries (Goode et al., 2019).

To facilitate addressing peoples' needs, many community-based pharmacies are now adding semi-private counselling areas or private counselling rooms to deliver further services (Goode et al., 2019). However, providing further services presents challenges for pharmacies. These include the integration of technology into the pharmacy to document the delivery of services and keep users' health records (Goode et al., 2019). Further, for pharmacists to expand their role, they need to continue their professional development and undergo additional training with a focus on user-centred care (Goode et al., 2019).

The UK has been at the forefront of expanding pharmacists' roles, and many pharmacies in the UK provide public health services such as: smoking cessation, lifestyle advice, substance misuse management and SRHS (Ali M.K. Hindi et al., 2018). SRHS has been identified as one area in which pharmacies could be more involved.

Although pharmacies are unlikely to replace other SRHS providers, they can complement the provision of several services. In England, pharmacies have been involved in the provision of SRHS such as pregnancy tests and treatment for thrush for several years (B. Taylor, 2008). Providing access to further services has the potential to positively impact STI rates and unwanted pregnancy and thus to reduce the public health and other societal costs associated with these issues (D. of Health, 2013). Further, pharmacies allow more vulnerable groups to engage with SRHS (D. of Health, 2013).

In England, the contribution of pharmacies in addressing SRH needs is variable across the country. While in some areas local authorities offer only a limited range of services through pharmacies, others have been more ambitious. The local authorities in Birmingham (England) have introduced a comprehensive range of services in pharmacies through their sexual health provider *Umbrella*. *Umbrella* and its pharmacy services are introduced in the next section.

1.7. *Umbrella* and their pharmacy services

As described in section 1.5.2, local authorities in England often put out a tender for SRHS. In Birmingham the commissioning parties, Birmingham City Council and Solihull Metropolitan Borough Council, put out a tender and University Hospitals Birmingham NHS Foundation Trust (UHB) developed a bid based on the commissioners' vision and created a novel approach on how SRHS could be delivered (Jewell et al., 2017). They were successfully awarded the tender in December 2014 and launched the SRHS under the name *Umbrella*. *Umbrella,* the service provider, has been delivering SRHS through several clinics, online provision, General Practices (GP) and community pharmacies since August 2015. Pharmacies which want to deliver *Umbrella*'s services have to fulfil certain criteria including having a private consultation room to deliver *Umbrella's* SRHS. More than 120 pharmacies across Birmingham are currently (as of 2020) delivering *Umbrella* SRHS.

Umbrella's pharmacy services are prescription free and free of charge for the user. All costs for the pharmacy services are covered by the Birmingham City Council via Umbrella. Pharmacies receive a fixed fee for each SRHS based on the average amount of time required per consultation, plus the cost of any drugs or devices.

Pharmacy staff record which *Umbrella* service is being used and collect data on all users of *Umbrella*'s pharmacy service. This data is owned by *Umbrella*. For service users under the age of 18, a safeguarding assessment is carried out alongside the standard data collection to protect young people from potential harm (e.g. sexual exploitation). All pharmacy users are obliged to

provide their name, date of birth and a Birmingham postcode. However, no identify check is completed to verify pharmacy users' details.

Pharmacies delivering *Umbrella*'s SRHS operate a 'Tier 1' or a 'Tier 2' level.

'Tier 1' pharmacies provide emergency contraception (EC) and condoms from available stock, dispensed directly to pharmacy users. They also dispense STI self-sampling kits (testing for chlamydia, gonorrhoea, HIV and syphilis, plus hepatitis B for men who have sex with men) that have been pre-ordered via *Umbrella's* website. STI self-sampling kits are the only service that can be pre-ordered from the *Umbrella* website and collected at any *Umbrella* pharmacy. Pharmacy staff working at 'Tier 1' pharmacies also provide self-sampling kits testing for both chlamydia and gonorrhoea from available stock directly to women presenting for EC.

In addition to the services offered by 'Tier 1' pharmacies, 'Tier 2' pharmacies provide oral contraception, contraceptive injection and chlamydia treatment from in store stock. Further, 'Tier 2' pharmacies have STI self-sampling kits (testing for chlamydia, gonorrhoea, HIV, syphilis, plus hepatitis B for men who have sex with men) in stock and can provide them directly to all pharmacy users. Finally, 'Tier 2' pharmacies can offer women presenting for emergency contraceptive with one emergency contraception pill that they can take immediately and one that they can take away for future use (advance emergency contraception).

The total number of pharmacies in Birmingham has decreased between August 2015 and August 2018 from 301 to 285 (Birmingham Health and Wellbeing Board, 2018). The number of *Umbrella* pharmacies has also changed over time: between August 2015 and August 2018 the number of 'Tier 1' pharmacies decreased from 158 to 80. However, the number of pharmacies offering more extensive 'Tier 2' services increased from 18 to 47.

Hormonal contraception such as emergency contraception, oral contraception and the contraceptive injection are restricted to females only, but males can access the pharmacy for condoms, STI self-sampling kits and chlamydia treatment.

All services except the STI self-sampling kits are accessible to users over the age of 13. The upper age limit for hormonal contraception is 60 years. For the remaining services there is no upper age limit. STI self-sampling kits can only be pre-ordered by over 16-year olds. However, women between 15 and 24 can be offered a chlamydia and gonorrhoea STI self-sampling kit when presenting for emergency contraception.

An overview of *Umbrella*'s pharmacy services and the eligibility criteria is provided in Table 3.

Umbrella services can only be provided by pharmacy staff who have undergone training and assessment by *Umbrella's* education team. *Umbrella* pharmacies have to ensure that at least some of their pharmacists are trained to deliver the services. Training for 'Tier 2' services is more comprehensive than 'Tier 1' services. Pharmacy healthcare assistants are only allowed to deliver condoms and STI self-sampling kits after they have obtained training from *Umbrella's* education

team. However, it is up to the pharmacy to decide whether they train their pharmacy healthcare assistants to deliver *Umbrella's* SRHS.

TABLE 3 *UMBRELLA*'S PHARMACY SERVICES

Umbrella's pharmacy services and data collection tools				
Type of *Umbrella* pharmacy service	***Umbrella's* Pharmacy Services**	**Eligibility by Age**	**Eligibility by Gender**	**Pharmacy Tier**
Contraception services	Emergency Contraceptive Pill	13-60	Women	Tier 1 & Tier 2
	Referral or Appointment for the copper coil at closest sexual health clinic	13-60	Women	Tier 1 & Tier 2
	Oral Contraception	13-60	Women	Tier 2
	Contraceptive Injection	13-60	Women	Tier 2
	Condoms	≥13	Women and Men	Tier 1 & Tier 2
STI testing services	Collection of pre-ordered STI self-sampling kits testing for up to five STI	≥16	Women and Men	Tier 1 & Tier 2
	STI self-sampling kits testing for up to five STI provided directly to pharmacy users	≥16	Women and Men	Tier 2
	STI self-sampling kit testing for chlamydia & gonorrhoea	15-24	Women	Tier 2
STI treatment service	Chlamydia Treatment	≥13	Women and Men	Tier 2

The SRHS that *Umbrella* offers will now be described in more detail.

Emergency contraception

Emergency contraceptive pills

Hormonal emergency contraception in the form of emergency contraceptive pills (ECPs) can be used after sexual intercourse to prevent pregnancy (Black & Hussainy, 2017), but only where ovulation has not yet occurred. Emergency contraception is used in more than 148 countries worldwide (Mooney-Somers et al., 2019).

In the 1980s a combined oestrogen-progesterone pill was specifically licenced as EC (Murphy & Pooke, 2019). The most common source of EC since its licensing was GPs, but EC could also be obtained from NHS community family planning clinics or young people's sexual health centres. However, by the mid 1990s, evidence emerged that the provision was inadequate (Schenk, 2003), largely as a result of a reluctance to get EC from GPs, and there was a shortage of clinics open at appropriate times (Crosier, 1996; Gbolade et al., 1999; Peckham, 1997).

In January 2001, pharmacy provision of levonorgestrel-only emergency contraception came into effect in the UK (Schenk, 2003), after France, the second European country to make emergency contraception available without prescription from pharmacists. In some European countries,

emergency contraceptive pills only became available much later: for example, in Germany it only became available without prescription from pharmacies in March 2015 (Said et al., 2019).

According to a survey by Public Health England (PHE), the large majority of local authorities (93%) provide emergency hormonal contraception (EHC) through pharmacies (Public Health England, 2017). It is the most commonly provided pharmacy-based SRHS provided by local authorities.

Umbrella provides both ECPs containing levonorgestrel or ulipristal acetate. In 'Tier 2' pharmacies, pharmacy users can also get advance EC meaning that they will be given an ECP for future usage. Pharmacists can additionally provide the user with a referral for the copper intrauterine device, which is introduced in the next section.

Copper intrauterine device

Copper intrauterine devices or copper coils have to be inserted by a trained healthcare professional. The copper intrauterine device is the most effective method of emergency contraception which contains no hormones. Its failure rate is less than 1% and in contrast to emergency contraceptive pills, it can also prevent implantation of the egg in case fertilisation has already occurred (Li & Gemzell-Danielsson, 2019). It can be inserted up to five days after ovulation (Black & Hussainy, 2017). In addition to its use as EC, the copper coil also provides ongoing contraception for up to 12 years (Kaller et al., 2020).

Umbrella provides people presenting for emergency contraception with the option to get a referral or appointment for insertion of a copper coil at a sexual health clinic in Birmingham. According to a survey by PHE, only 3% of local authorities were providing any type of long acting reversible contraception through pharmacies and it is not specified whether the copper coil was amongst these contraception methods being offered (Public Health England, 2017).

Umbrella also provides other contraceptive methods, which are outlined below.

1.7.1. Ongoing oral contraception

Combined oral contraception (COCs) use is highest in those in and around their late teens and early twenties, while progesterone-only pills tend to be taken more by older women (J. Gill & Taylor, 2017). Progesterone-only pills (POPs) avoid some of the contraindications associated with the intake of combined oral contraception. However, they also have disadvantages compared to the combined pill. For example, they have to be taken within three hours of the target time (as opposed to 12 hours for COCs) for their efficacy to be maximised (J. Gill & Taylor, 2017).

Oral contraception (OC) is the most common form of contraception in Africa, Europe, and Oceania, and the most commonly used reversible contraception among married women or women in a partnership in America (Grindlay, Burns and Grossman, 2013).

Ongoing oral contraception has been free of charge through the National Health Service (NHS) in the UK since 1974 (Boog et al., 2019). Due to cuts in funding, the advisory group on

contraception reported in 2017 that over the previous two years, contraceptive services in over one-third of English local councils had been closed or were under threat (Boog et al., 2019).

The services where women traditionally get their contraception such as GPs and SRH clinics are facing cuts, resulting in reduced appointment numbers, longer waiting times and restricted opening hours (Boog et al., 2019). Making oral contraception easily accessible is important for women wishing to take OCs to prevent pregnancies by using oral contraception (Grindlay, Burns and Grossman, 2013).

Providers are therefore concerned whether cuts in funding will lead to reduced access to contraception (Boog et al., 2019). Pharmacy contraception provision has therefore been highlighted as an area for development (Boog et al., 2019). In the UK, COCs and POPs are currently a prescription-only pills but can be supplied under instruction from a patient group direction (PGD) (Boog et al., 2019). A PGD is a legal mechanism enabling supply of a prescription only medication (Boog et al., 2019). The document allows specified healthcare professionals to supply a medicine directly to patients who fit into predefined criteria without needing a prescription or instruction from a prescriber (Boog et al., 2019).

In 'Tier 2' *Umbrella* pharmacies, ongoing hormonal contraception (progesterone-only pills and combined pills) can be provided to users through the PGD without prescription. The survey from Public Health England showed that only 3% of local authorities provide "other contraception", which may include ongoing hormonal contraception, through pharmacies (Public Health England, 2017). In addition to oral contraception, *Umbrella* also provides the contraceptive injection, which is the subject of the next section.

1.7.2. Contraceptive injection

The contraceptive injection is a reliable method of contraception for those who are able to receive regular doses in a timely fashion (Trussell, 2011). In the UK, there are two injections available: depot medroxyprogesterone acetate in the intra-muscular version (150 mg DMPA-IM given every 12 weeks, Depo-ProveraVR) and the more recently licensed subcutaneous version (104 mg DMPA-SC given every 13 weeks, Sayana® PressVR). The latter one is easier to administer and can be self-administered (R. Heller et al., 2017). Same as oral contraception, the contraceptive injection can be provided through the pharmacy via a PGD (R. Heller et al., 2017).

Research from a specialised contraceptive service in Scotland indicated that the option to receive injection from community pharmacies might improve the uptake of the contraceptive injection. (Rebecca Heller & Cameron, 2016). However, evidence on the delivery of the contraceptive injection through pharmacies to date is limited. Two small studies from the United States have shown that a pharmacy-based contraceptive injection is feasible (Maderas & Landau, 2007; Picardo & Ferreri, 2010), however only one study from the UK has looked at the feasibility of the contraceptive injection to date (R. Heller et al., 2017).

Only 3% of local authorities provide long-acting reversible contraception and it is not clear whether this includes the contraceptive injection (Public Health England, 2017).

Umbrella provides the contraceptive injection Sayana® PressVR in 'Tier 2' pharmacies.

1.7.3. Condoms

The male condom is a barrier based means of contraception (J. Gill & Taylor, 2017). Condoms are a cost-effective contraceptive method (W. Evans et al., 2019) which can, when used correctly and consistently, not only prevent unwanted pregnancies but also STIs such as chlamydia, gonorrhoea, syphilis and HIV (Anstee et al., 2019; Ryder et al., 2015; Stone et al., 2018). The use of condoms is now higher than ever before and it is estimated that this has prevented 50 million HIV infections since the 1980s (W. Evans et al., 2019).

In England, the first multicomponent condom distribution scheme, called C-Card, was developed in 1989. The nationwide C-Card scheme offers free access to condoms for individuals between 13 and 25 years (J. Gill & Taylor, 2017). C-Card venues include pharmacies, youth voluntary organisations and education settings, General Practices, and sexual health clinics; but also work-based learning providers, sports and leisure venues and supported housing providers (Public Health England, 2015). Condoms can also be purchased in community pharmacies and via vending machines and/or the internet (J. Gill & Taylor, 2017). 57% of local authorities provide condoms through pharmacies (Public Health England, 2017), including *Umbrella* pharmacies. *Umbrella* pharmacies also provide written condom instructions for pharmacy users.

While condoms can prevent STIs, testing can help to detect STIs for early treatment. Information on STI self-sampling kits is described in more detail in the following section.

1.7.4. STI self-sampling kits

Case identification and treatment is an effective form of preventing onward transmission of STIs (Barnard et al., 2018). Self-sampling methods are novel approaches to screening where the sample for STI testing is collected by the patient rather than a health professional (Griner et al., 2019).

With the introduction of nucleic acid amplification tests (NAATs), which are the recommended test by the WHO for chlamydia and gonorrhoea (H. Wood & Gudka, 2018), asymptomatic patients can carry out self-sampling for STIs at home, also referred to as home-based testing. When screening for syphilis, HIV and hepatitis B, blood samples are needed.

Chlamydia, gonorrhoea, and syphilis screening kits can be purchased from some pharmacies in the USA and in the UK. Gonorrhoea kits can also be purchased from selected pharmacies in Australia (H. Wood & Gudka, 2018). Some pharmacies in the UK also provide free screening kits for chlamydia and gonorrhoea over the counter (H. Wood & Gudka, 2018). To date, the National Chlamydia Screening Programme in the UK, implemented in 2008, is the only nationally coordinated screening initiative involving community pharmacies (H. Wood & Gudka, 2018).

HIV self-sampling kits, which require individuals to collect a specimen and send it to a laboratory for testing, have been available for some time in the UK and Belgium (Hoyos et al., 2018). Pharmacist-led hepatitis B screening has been trialled in England.

While 73% of local authorities provide chlamydia screening in pharmacies, only 11% reported testing for other STIs, and only 6% indicated that they provide HIV testing (Public Health England, 2017).

Umbrella provides self-sampling kits testing for chlamydia, gonorrhoea, HIV, syphilis and hepatitis B. Chlamydia and gonorrhoea NAAT testing kits consist of either a vulvovaginal swab (for females) or a urine collection pot (for males) (Banerjee et al., 2018). Further, they include a lancet and blood-sample collection tube for HIV, syphilis and hepatitis B (Banerjee et al., 2018). Depending on the site of exposure, kits can also include rectal and oral swabs (Banerjee et al., 2018).

Once people have completed their STI samples, they can post the STI self-sampling kits to the local laboratory for processing free of charge. All those who test positive for an STI receive an automated text message via their phone, usually within 10 working days. Depending on the permissions granted by the person who ordered the STI self-sampling kit, the text message is followed up by a health advisor from the sexual health clinic in Birmingham via telephone, or a letter to the patient or their GP. People with a positive test result are provided with treatment and asked to help by informing their sexual partners that they may be at risk of an STI. *Umbrella's* health advisors at the sexual health clinic in Birmingham can call sexual partners of the patient without revealing the patient's name. Alternatively, the patient can choose to contact their sexual partners themselves. While treatment for most STIs has to be obtained from the *Umbrella* clinic, 'Tier 2' pharmacies offer chlamydia treatment. This is outlined in the next section.

1.7.5. Chlamydia Treatment

Chlamydia infections are usually easily treated (Kalwij et al., 2010). More than 95% of those treated are negative for chlamydia after two weeks (Kalwij et al., 2010). No test of cure is needed if effective treatment has been taken, except in pregnant women (Kalwij et al., 2010). The recommended first-line treatment is doxycycline 100mg twice a day orally for seven days (Draeger, 2019a). In patients allergic to tetracyclines, azithromycin 1g is given as a single dose, then 500mg per day for two days (Draeger, 2019a). *Umbrella* uses a PGD to supply treatment for chlamydia through pharmacies (C. Anderson & Thornley, 2011). People attending for chlamydia treatment in the pharmacy do not need to prove that they tested positive for chlamydia, as some patients might have deleted the text for privacy reasons.

Only 11% of local authorities indicated that they provide STI screening and treatment through pharmacies (Public Health England, 2017) and it is not clear how many local authorities provide chlamydia treatment.

Only a few papers on pharmacy-based chlamydia treatment have been published to date (C. Anderson & Thornley, 2011; Baraitser et al., 2007; McClure & Cameron, 2016).

1.8. Focus of this project on pharmacy-based SRHS

As shown in the previous section, the local authorities in Birmingham offer a large range of SRHS through *Umbrella* and provide more services than most other local authorities in England. This provided a unique opportunity to explore the delivery of an implemented and comprehensive pharmacy service in this PhD project.

The focus of this project was to explore the experiences of pharmacy staff and users and also the utilisation of pharmacy-based SRHS. The reason for exploring experience and utilisation of pharmacy-based SRHS will be outlined in the following section.

1.8.1. Importance of exploring user and staff experience

Traditionally, health service design did not focus on people and experiences but on systems, resources and care services (DonHee Lee, 2019). However, user experience has been identified as important in a wide range of applications and has increasingly been recognised as an important indicator of healthcare quality (Doyle et al., 2013; S. of S. for Health, 2008). Evidence on user experience is often cited in health policies around the world (Baker, 2001; Gleeson et al., 2016). Healthcare organisations in England have to review patient experience as part of their quality and performance reporting, and sometimes funding is dependent on achieving improvement in patient experience (Gleeson et al., 2016). Patients themselves believe that their experience should be part of healthcare service design process and, in England, patient experiences are increasingly visible to the public through online resources such as NHS Choices (Gleeson et al., 2016).

Patient experience is the result of human-to-human interaction and exploring patient experience is therefore seen as part of a human- or patient-centred approach to service design (DonHee Lee, 2019). Each patient experience is unique and depends on the patient's personality, emotion, diversity and context (DonHee Lee, 2019). It is therefore a rich source of important information for designing healthcare services (DonHee Lee, 2019). Exploring patient experience can help to understand patients' requirements and also provides an opportunity to address problems and to learn from patients on how to improve care (K. A. Fisher et al., 2019).

Improving patient experience is regarded as important in the UK and worldwide (Coombes, 2008; Coulter, 2005; Fund, 2008; S. of S. for Health, 2008; White, 2012). This is because positive patient experience has shown to have implications with regards to outcomes such as patient safety, clinical effectiveness, greater adherence to treatment recommendations, and lower use of additional healthcare such as repeat hospitalisations or overuse of primary care (Doyle et al., 2013). Further, patient experience is associated with ease of acquisition, loyalty and the intention to revisit (DonHee Lee, 2019). To improve patient experience, it is important to capture patient experiences during care episodes or service delivery (Male et al., 2017).

Users' experiences have been prioritised over those of staff (Goodrich, 2018). However, staff experience should also be central in healthcare design. Exploring staff experiences can ensure that the right changes occur to improve staff work lives (Goodrich, 2018). Further, it is evident that

users' and staff experiences are intrinsically linked and improving staff experience has shown to consequently also improve patients' experiences (Goodrich, 2018). Exploring pharmacy staff experiences can also make them more engaged and motivated through being involved in making changes (Goodrich, 2018).

The main focus of this PhD thesis was therefore to explore both users' and staff experiences as both can contribute to the identification of changes that would benefit both groups and hence, lead to the development of recommendations for service optimisation. In this thesis, people attending the pharmacy are referred to as pharmacy users rather than patients as they may be healthy.

1.8.2. Importance of exploring service utilisation

Healthcare utilisation can be defined as the quantity of healthcare services accessed by a population. Over the last decade, there has been growing enthusiasm for data analytics as well as growing appreciation of the potential usefulness of big data in transforming public health (Vayena et al., 2018). At the institutional level, the analysis of electronic health records may greatly expand the capacity to generate new knowledge (Vayena et al., 2018). It is commonly acknowledged that health-related data routinely collected as part of everyday practice have great potential to improve patient care, citizens' lives and professional services (K. H. Jones et al., 2017). Understanding patient profiles enables interventions and policies to be more strategically targeted.

Internationally, there has been considerable debate about the role of data in supporting quality improvement in health care (J. Greenhalgh et al., 2018). The utilisation of health-care services depends on many factors including the quality of health-care, cultural beliefs and practices, and socio-economic factors such as age, sex, and ethnicity (Abera Abaerei et al., 2017) . It is important to quantify the degree to which individuals who are not well seek care from public health-care facilities such as pharmacies (Abera Abaerei et al., 2017). Despite potential benefits, the use of user profiles has not yet received much attention in health care informatics research (LeRouge et al., 2013). A recent study from the United States described associations between patient demographics and service utilisation at pharmacies and concluded that future research should explore how patient characteristics affect the use of pharmacy services to facilitate targeted marketing of expanded pharmacy services to different populations (Patterson & Holdford, 2019).

Demographic characteristics have been found to be associated with patient preferences for health care providers. For example, in 2008, Franic et al. (2008) compared a number of patient characteristics across community pharmacy settings and reported differences in the mean age and the proportion of rural patients between different settings (Franic et al., 2008).

Associations between demographic characteristics and utilisation of expanded pharmacy services have not been investigated systematically. A better understanding of these associations might provide insights into how pharmacy services provide value to specific demographic groups,

ultimately informing more effective and targeted development and marketing of pharmacist services to particular patient groups (Patterson & Holdford, 2019).

Hence, the utilisation of a wide range of pharmacy-based SRHS was explored in the current PhD project.

1.9. Thesis Aim and Objectives

This section outlines the thesis aim and objectives. The overall aim of this PhD was to develop recommendations for optimisation of pharmacy-based SRHS. To achieve this goal, users' and staff experiences and the utilisation of pharmacy-based SRHS were explored as mentioned in the previous section.

1.9.1. Aim

- To develop recommendations for the service optimisation of pharmacy-based sexual and reproductive health services in England (UK)

1.9.2. Objectives

1. To describe the utilisation of pharmacy-based sexual and reproductive health services using a retrospective quantitative study
2. To summarise what is known about pharmacy users' and pharmacy staff attitudes and experiences of pharmacy-based sexual and reproductive health services using a systematic review
3. Based on the findings of the systematic review and retrospective quantitative study, to explore pharmacy users' and pharmacy staff attitudes and experiences and to explore the implementation of pharmacy-based sexual and reproductive health services using semi-structured interviews
4. To synthesise all findings to develop recommendations for service optimisation

The methods used to address the objectives outlined above are justified in the subsequent chapter.

1.10. Research Design

To achieve the overall research aim, two approaches were undertaken: firstly, exploration of experiences and secondly, exploration of utilisation of pharmacy-based SRHS.

To explore the utilisation of pharmacy-based sexual and reproductive health services, a retrospective quantitative study was conducted. To explore experiences, a systematic review synthesising qualitative and quantitative evidence was initially conducted.

Both the systematic review and the retrospective study informed the interview study, which is the heart of this PhD project. It involved the collection of primary data on users' and staff experiences with pharmacy-based SRHS.

The results from all three components were synthesised. Based on the integrated findings, recommendations for service optimisation were developed. The research design is illustrated in Figure 3.

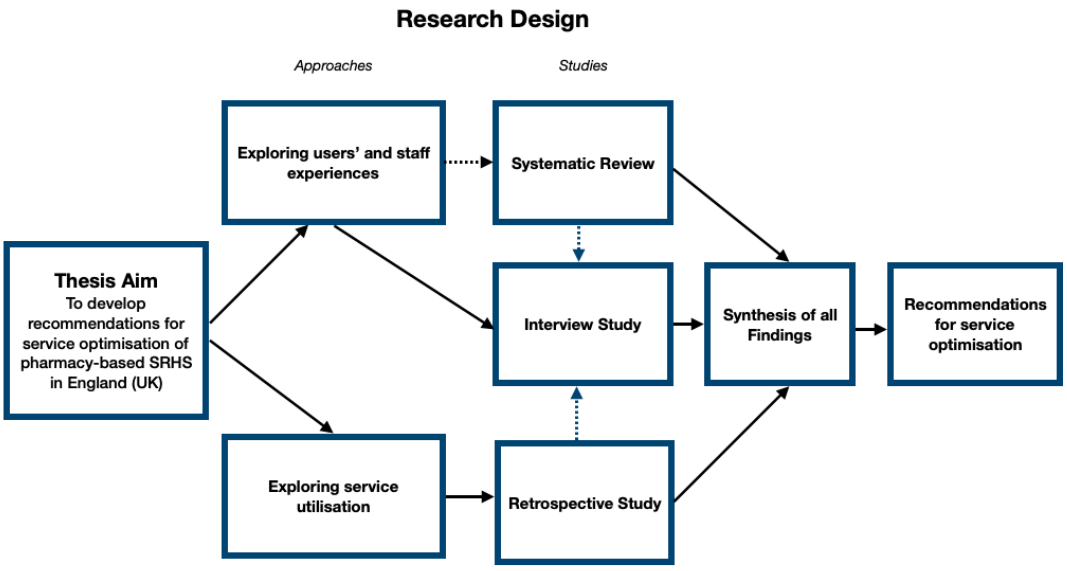

FIGURE 3 RESEARCH DESIGN

1.11. Thesis Structure

The current thesis has ten chapters including this introduction chapter. Figure 4 provides an overview of the thesis structure and illustrates in which chapters the four thesis objectives are addressed.

Chapter 2 provides background to the methodological stance and approach for this thesis. In this chapter, all methods used in this thesis are justified along the different thesis objectives. The methods themselves are explained in subsequent chapters.

The retrospective study is presented in chapters 3 and 4. The aim of this retrospective study was "to describe the utilisation of pharmacy-based SRHS". Chapter 3 describes the methods of the retrospective study and chapter 4 provides the results and discussion of the retrospective study.

Chapter 5 and Chapter 6 report the systematic review which addressed the second objective of the thesis which was "to summarise what is known about pharmacy users' and pharmacy staff experiences of pharmacy-based sexual and reproductive health services". While chapter 5 describes the methods used to conduct the systematic review, chapter 6 presents the results and discussion of the systematic review.

Both the retrospective study (presented in chapter 3 and chapter 4) and the systematic review (presented in chapter 5 and chapter 6) inform the qualitative interview study, which is presented in the chapters 7 and 8. Chapter 7 outlines the methods used for the interview study and chapter 8 presents the results and discusses the interview study findings.

Chapter 9 and Chapter 10 address objective 4, which was "to synthesise all findings to develop recommendations for service optimisation". In chapter 9, the methods used to synthesise the data are explained, and the results of the data synthesis presented. In the final chapter (chapter 10), recommendations for service optimisation are then outlined based on the results of the data synthesis. Then, the strengths and limitations of the thesis are presented and the dissemination plan for the thesis findings and recommendations discussed. The thesis ends with the conclusion, which highlights the key contributions of this mixed methods project.

FIGURE 4 OVERVIEW OF THESIS STRUCTURE

1.12. Research team members

The PhD project was supported by several research team members. Both academic supervisors, Dr Helen Atherton (H.A.) and Prof Jonathan Ross (J.R.) supported the conduct of the whole project.

Two medical students at Warwick Medical School, Isobel Hall (I.H.) and Irekanmi Soda (I.S.) supported the conduct of the systematic review. The review was further supported by the specialist librarian Samantha Johnson at Warwick University (S.J.) and Prof Xavier Armoiry (X.A.), a former researcher at Warwick Medical School.

The retrospective study was supported by Dr Peter K Kimani (P.K.), Associate Professor in Medical Statistics at Warwick Medical School, and the interview study by Dr Jo Parsons (J.P.), a research associate at Warwick Medical School with extensive experience in qualitative research.

Dr Amy Grove (A.G), co-developer of the Pillar Integration Process and Associate Professor at Warwick Medical School, provided advice on the conduct of the data synthesis.

Since Dr Helen Atherton was on sick leave since April 2020, Prof Jeremy Dale co-supervised the write up of the PhD from April 2020 to September 2020.

The individual contributions of the research team members are acknowledged in the relevant chapters.

1.13. Chapter summary

This chapter was the first of ten thesis chapters. It began by explaining what is understood by sexual and reproductive health (SRH) and sexual and reproductive health services (SRHS) in general. Afterwards, the definition of SRHS for this project was outlined. In this thesis, SRHS are defined as services relating to contraception and sexually transmitted infections. It was shown why these SRHS are important. Then, it was explained how SRHS are commissioned and provided around the world and in England (UK), in particular, and pharmacies and their role in delivering SRHS were introduced. Following this, an overview of the integrated and comprehensive pharmacy service *Umbrella* was provided as their services were explored in this PhD thesis. Next, the focus of this PhD project on experience and the utilisation of pharmacy-based SRHS was justified. Subsequently, the aim and objectives of this thesis and the research design were presented. Afterwards, an overview of the thesis structure was offered. Next, the research team members who supported the conduct of this PhD project were introduced. The following chapter (chapter 2) is the background to the methodological approach. In this chapter, the methodological stance of the thesis is explained, and a rationale presented for all methods used in this PhD thesis. Descriptions of the methods for each sub-study are provided in subsequent chapters.

2. Background to the methodological approach

2.1. Chapter overview

This chapter outlines the background to the methodological approach for this thesis. It begins by reiterating the aim and objectives of the thesis. Then, the methodological stance of the thesis is presented. Afterwards, the different research methods used to address each objective of the thesis are discussed. The methods themselves are described in subsequent chapters.

2.2. Thesis Aim and Objectives

2.2.1. Aim

- to develop recommendations for the service optimisation of pharmacy-based sexual and reproductive health services in England (UK)

2.2.2. Objectives

1. To describe the utilisation of pharmacy-based sexual and reproductive health services using a retrospective quantitative study
2. To summarise what is known about pharmacy users' and pharmacy staff attitudes and experiences of pharmacy-based sexual and reproductive health services using a systematic review
3. Based on the findings of the systematic review and retrospective quantitative study, to explore pharmacy users' and pharmacy staff attitudes and experiences and to explore the implementation of pharmacy-based sexual and reproductive health services using semi-structured interviews
4. To synthesise all findings to develop recommendations for service optimisation

2.3. The methodological stance of this thesis

A paradigm can be defined as a set of assumptions concerning reality (ontology), knowledge of reality (epistemology), and the particular ways of knowing that reality (methodology) (Guba, 1990). While both qualitative and quantitative approaches can inform policy and practice (Noyes et al., 2019), they are based on different paradigms, which largely contrast in their ontological, epistemological and methodological positions (see Table 4). They are also based on different underlying philosophies. Whereas quantitative research is based on positivism, which implies that all phenomena can be studied objectively through empirical experimentation, qualitative research is based on interpretivism and constructivism, which imply that meaning is created by human actors.

However, that qualitative and quantitative approaches are based on different paradigms does not mean that multiple methods cannot be used in one research project (Sale et al., 2002). Instead, qualitative and quantitative approaches can be combined to complement each other (Sale et al., 2002).

The approach where both qualitative and quantitative methods are used is referred to as mixed methods (Schoonenboom & Johnson, 2017). Compared to monomethod research it has the potential to allow richer insights to be gained and therefore lead to superior research (R. B. Johnson & Onwuegbuzie, 2004). Acknowledging that sometimes phenomena cannot be fully understood by using only one approach (Venkatesh et al., 2013), the use of both types of evidence to address an overall research question has increased in popularity over the past years in many fields including health research (Bryman, 2006; Creswell, 2011).

Mixed methods research can lead to a broader investigation of research questions and the development of high-quality guidelines for recommendations (Noyes et al., 2019; Roberts & Noyes, 2009).

To achieve the level of understanding needed to answer the overall research question of this PhD, it therefore was decided to use both qualitative and quantitative methods. Hence, with regards to the methodological stance of this thesis, the research conducted for this PhD on pharmacy-based sexual and reproductive health services was neither solely positivist, nor anti-positivist. Instead, quantitative and qualitative methods were used for complementary purposes.

Most important when designing a mixed methods study, is to plan a point of integration at which both quantitative and qualitative components are combined in some way (Schoonenboom & Johnson, 2017). The choice of method to integrate qualitative and quantitative findings is justified in section 2.7.

TABLE 4 THE QUANTITATIVE AND QUALITATIVE PARADIGMS

	Quantitative paradigm	Qualitative paradigm
Underlying philosophies	Positivism	Interpretivism and constructivism
Ontological position	The truth is a representation of the objective reality that exists independent of human perception.	There are multiple realities based on one's construction of reality, which is socially constructed and hence, constantly changing.
Epistemological position	Since the investigator and the investigated are independent entities, phenomenon can be studied without influencing or being influenced by it.	The investigator and the investigated are interactively linked; hence, the findings are mutually created within the context of the situation which shapes the inquiry.
Methodological position	Techniques such as randomisation, blinding, questionnaires with a limited range of predetermined responses are used to measure and analyse causal relationship between variables within a value-free framework. Large sample sizes are used to ensure that samples are representative.	Techniques used in qualitative studies include in-depth and focus group interviews and participant observation; purposive sampling is used.

2.4. Justification for including a retrospective quantitative study

One of the objectives of the current thesis was:

Objective 1:

- To describe the utilisation of pharmacy-based sexual and reproductive health services using a retrospective quantitative study

Quantitative methods rely on numbers to obtain accurate and reliable measurements (Queirós et al., 2017; Schutt, 2019). Quantitative techniques focus on objectivity and are epistemologically positivist whereby it is presumed that the social world is knowable by observers who quantify its characteristics (Queirós et al., 2017; Schutt, 2019).

Retrospective studies use secondary data, which is data that is available but was originally collected for other purposes (Hess, 2004; Johnston, 2017). Over time, the availability of previously collected data has increased and technological breakthroughs over the past two decades have simplified data analysis. Further, data is increasingly available electronically which makes the sharing of datasets easier (Doolan et al., 2017; Jorm, 2015). Consequently, retrospective studies have become more popular, particularly in health service research (Cole & Trinh, 2017).

In the era of 'big data', where a large amount of health-related data is collected routinely by policy-makers and healthcare providers as a by-product of health care delivery, the potential of routinely collected data has increasingly been recognised (Jorm, 2015). Routinely collected data can contribute towards the effectiveness and efficiency of health care systems (Jorm, 2015) and is commonly used to describe healthcare utilisation (Cappetta et al., 2020; Somers et al., 2016; Tunesi et al., 2019). Compared to the conduct of primary research, secondary data analysis is time and cost-effective (Johnston, 2017) and therefore should be utilised where new research questions can be answered by existing data sets (Doolan & Froelicher, 2009).

Measures associated with health service utilisation include outcomes and volume of services (Da Silva et al., 2011). Moreover, studies on health service utilisation often give insight into socio-demographic characteristics of health service users (Ben et al., 2017; Gerritsen & Devillé, 2009). Community pharmacies have a large amount of information, including patient records and information on over-the-counter sales (Wright & Twigg, 2016). If used appropriately, this information can be used to enhance the quality of services and patient care (Wright & Twigg, 2016). Therefore, a retrospective study was used in this project, to describe the utilisation of pharmacy-based sexual and reproductive health services. The analysis can also provide important information on the qualitative study, which is justified in section 2.6.

2.5. Justification for using systematic review methodology

Objective 2:

- To summarise what is known about pharmacy users' and pharmacy staff attitudes and experiences of pharmacy-based sexual and reproductive health services using a systematic review

To be familiar with 'what is known' about a topic it is crucial to evaluate what has been studied to date (Gough et al., 2017). For every research project, it is therefore important to conduct a literature review to clarify what is known from pre-existing research studies (Gough & Richardson, 2018; Tranfield et al., 2003).

The overarching goal of some types of literature reviews such as theoretical reviews and realist reviews is explanation building (Paré et al., 2015). In theoretical reviews, various evidence is brought together and a structured approach taken to identify patterns that facilitate the development of new theories or a conceptual framework (Baumeister & Leary, 1997; Webster & Watson, 2002). In realist reviews, evidence is synthesised in order to refine theory (Paré et al., 2015) and mechanisms of how complex interventions work, or do not work, in particular contexts unpacked (Pawson et al., 2005). Since both, theoretical reviews and realist reviews, go beyond merely just summarising past work (Paré et al., 2015), they were not be deemed as appropriate to address the thesis objective.

Instead, literature reviews such as narrative reviews, scoping reviews, and systematic reviews can be used to summarise what has been written about a certain subject (Paré et al., 2015). Narrative reviews discuss important topics on a theoretical point of view (T. Greenhalgh et al., 2018; Jahan et al., 2016). The evidence reviewed suggests that search terms, databases used and inclusion and exclusion criteria are usually not reported in narrative reviews (Bernardo et al., 2004; Jahan et al., 2016; Paré et al., 2015). Consequently, narrative reviews may be vulnerable to subjectivity (Green et al., 2006; Pieper et al., 2012). It was therefore decided to choose a literature review design which involves the transparent reporting of the data search. Scoping reviews have a systematic approach in searching to select studies and are used to examine the extent, range and nature of research that has been conducted in an area (Paré et al., 2015). They are usually used to answer broad research questions (Armstrong et al., 2011). Since the current PhD project aimed to explore a relatively narrow research question, it was decided to conduct a systematic review rather than a scoping review.

This decision was made on the one hand because systematic reviews are often used to explore attitudes and experiences in health research (Jennings et al., 2018; Johl et al., 2016; Rebafka et al., 2018; van Dongen et al., 2020). On the other hand, this type of review is well established and offers the highest level of evidence to inform decision making (Aromataris et al., 2015). Another strength of systematic reviews is that they can reveal research areas which require further exploration and inform the delivery of health care (M. Rodgers et al., 2009); this review could therefore inform the scope of this project while also helping to provide recommendations for practice. Further, systematic review findings are generated from a range of settings and populations increasing their robustness and generalisability (D. Evans, 2003). In contrast to narrative reviews (Green et al., 2006; Paré et al., 2015; Paré & Kitsiou, 2017) which may have an unstructured approach, evidence is summarised in systematic reviews through transparent and structured methods to search, screen, select, critically appraise and summarise findings (T. Greenhalgh et al., 2018). A systematic review was therefore considered as an appropriate method to address the thesis objective in question.

2.6. Justification for the conduct of qualitative research and the use of semi-structured interviews

The third thesis objective was as follows:

Objective 3:

- Based on the findings of the systematic review and retrospective quantitative study, to explore pharmacy users' and pharmacy staff attitudes and experiences and to explore the implementation of pharmacy-based sexual and reproductive health services using semi-structured interviews

This section is broken down into four parts: The justification for taking a qualitative approach to address this objective; the justification for choosing interviews as qualitative method to explore experience; the justification for choosing semi-structured interviews; and the justification for using Normalisation Process Theory to explore the implementation of pharmacy-based sexual and reproductive health services.

2.6.1. Using a qualitative approach to explore experience

The third thesis objective was to explore pharmacy users' and pharmacy staff attitudes and experiences and to explore the implementation of pharmacy-based SRHS. Traditionally, Likert scales, a rating system where each response category is assigned a numerical value have been used to measure attitudes and perceptions quantitatively (Carrasco & Lucas, 2015; Ho, 2017). Likert scales allow participants to choose from a range of possible responses to a specific question or statement. However, while Likert-type scales are economical and easy to analyse, the limitations of this approach to exploring attitudes have increasingly been recognised (Carrasco & Lucas, 2015; Ho, 2017). Likert scale results are inherently numerical and although they are statistically feasible, they can be difficult to interpret or translate into narrative form and apply in practice (Ho, 2017). Where research objectives cannot be explored through quantitative approaches, qualitative approaches can be used (Carrasco & Lucas, 2015). Qualitative research is a scientific approach to exploring human attitudes and experiences and to gaining greater understanding of factors influencing experiences (Gelling, 2015). In contrast to quantitative research, qualitative research is about the interpretation of nonnumeric data and aims to make sense of and identify patterns among nonnumeric data to develop a meaningful picture (Hoek et al., 2017; Leung, 2015). Findings from qualitative research have contributed to the advancement of health research and can change practice (Sandelowski, 2004). Since most qualitative research studies explore only a specific issue in a certain population, generalisability of the findings cannot be expected (Leung, 2015). However, through the collection of rich data, questions for which little is known can be answered in qualitative research (Nathan et al., 2018).

It was therefore decided to take a qualitative approach to investigate pharmacy staff and pharmacy users' views and experiences.

2.6.2. Choosing the method to explore experiences

Traditionally, qualitative research uses data collected through interviews, focus groups, or observations (Carr et al., 2019). More recently, new approaches such as the analysis of social media content, emails and instant messages have emerged in qualitative research (Carr et al., 2019). Further, audio diaries and photovoice, a research method where photographs alongside narratives are used to elicit rich data, have increasingly been used in qualitative research (Carr et al., 2019).

However, one-on-one Interviews, in which an interviewer investigates participants' experiences and attitudes in-depth, and focus groups, in which a researcher facilitates a group discussion between participants, are still the most commonly used qualitative methods (P. Gill & Baillie, 2018; Guest et al., 2017; Johnstone, 2017). When deciding whether to conduct interviews or focus groups with pharmacy users for this study it needed to be considered that sexual and reproductive health is a sensitive topic (Elam & Fenton, 2003). It might also be intrusive, meaning that it may be a topic that respondents do not like to discuss or find it difficult to talk about (Elam & Fenton, 2003). While there is evidence to suggest that focus groups may be effective to discuss sensitive topics (Guest et al., 2017), a recent study found that individual interviews were more effective than focus groups to discuss sensitive topics (Kruger et al., 2019). Focus groups have also been found to lead to less valuable data collection if rapport and trust within a group cannot be established and that these issues of trust may be related to the sensitive nature of the topic (Carey & Asbury, 2016). Further, where there is a risk of social stigmatisation, focus groups should be avoided as participants may not discuss their experiences and attitudes freely or may hesitate to engage in the discussion (Harrison et al., 2015; O. Nyumba et al., 2018). In asking pharmacy users about their experiences of pharmacy-based sexual and reproductive health services, it might have been that users and staff wanted to talk about their sexual lives, their relationship to the pharmacist, and other topics that pharmacy users may not have been comfortable to share in front of other people. Possibly, online focus groups could have been feasible as they provide more anonymity and might increase participation in a conversation on sensitive topics (D. W. Stewart & Shamdasani, 2017). However, computer malfunctions, problems with internet connectivity and cyber security breaches are issues that may arise in online focus groups (Hawkins, 2018).

Interviews provide a more confidential setting for participants in comparison to focus groups (Carey & Asbury, 2016) and allow researcher to go deeper and highlight on personal issues (Adhabi & Anozie, 2017). It was therefore decided to conduct one-on-one interviews rather than focus groups to explore pharmacy users' experiences and attitudes.

It was also considered to conduct focus groups with pharmacy staff; since staff were in the position of delivering rather than using the SRHS, the risk of inhibiting discussion due to a sensitive topic was lower; however, from a practical point of view, setting up focus groups can cause logistical problems (Tausch & Menold, 2016) as people have to be brought together in one place (D. W.

Stewart & Shamdasani, 2017) at a certain time. As pharmacy staff have time constraints and often also work in the evening and on weekends, focus groups may not have been feasible to conduct. Instead, it was decided to conduct one-on-one interviews with pharmacy users and pharmacy staff.

2.6.3. Choosing the type of interviews

There are different types of interviews: They can be structured, unstructured or semi-structured. Structured interviews are fully controlled by the interviewer and give the interviewee less room to be flexible and casual (Stuckey, 2013). Questions are kept short and it is expected that study participants answer with short and straightforward responses. In structured interviews, researchers have to adhere to the sequence of questions and question wording (Adhabi & Anozie, 2017). While this rigid structure and uniformity increases the validity of interview findings, structured interviews also have disadvantages. For example, interviewees may not be able to provide appropriate context for their answers such as motivations, reasoning and further elaboration (Adhabi & Anozie, 2017). Structured interviews are therefore more commonly used to collect quantitative data, for example in survey research, rather than qualitative data (Stuckey, 2013).

In contrast, unstructured interviews are not based on an interview script and have broad objectives (Young et al., 2018). They are led by respondents' priorities and concerns (Pope & Mays, 2006) and questions by the interviewer are asked spontaneously (Bryman, 2016). They are used to unfold events from interview participants (Stuckey, 2013) and to explore new research questions (Sorsa et al., 2015). However, shortcomings include lack of consistency across participants and lack of advanced planning (Chauhan, 2019). In order to make it easier to draw comparisons between interview participants' experiences while still allowing participants to talk about what seems significant for them, it was decided to choose semi-structured interviews.

Semi-structured interviews are those where a researcher has predefined questions but can probe further to produce data which can offer insights into participants' experiences and attitudes (Peters & Halcomb, 2015). They also allow questions emerging from the conversation to be added and have no rigid adherence (Whiting, 2008). This allows the researcher the flexibility to ask more enhanced questions than initially planned (Adhabi & Anozie, 2017). Semi-structured interviews are the most common type of interview used in qualitative research (Stuckey, 2013) and are often used to explore experiences and attitudes (Englander et al., 2018; Laidsaar-Powell et al., 2016; Skinner et al., 2009). Semi-structured interviews were therefore deemed as appropriate to explore pharmacy users' and staff experiences for this PhD project.

2.6.4. Choosing Normalisation Theory to explore the implementation of SRHS

Closing the gap between research and practice is a problem in health service research which can be addressed by underpinning research with strong theoretical approaches (Murray et al., 2010; O'Donnell et al., 2017). If research lacks theoretical underpinning it is more difficult to fully

understand why implementations were or were not successful and to identify factors contributing towards or inhibiting successful implementation (McEvoy et al., 2014; Nilsen, 2015). Theory can further help to gain an understanding of the wider significance of qualitative research findings, (O'Donnell et al., 2017; Reeves, Albert, Kuper, & Hodges, 2008) and to translate processes that are beneath the visible surface and to gain knowledge of underlying principles for policy makers and healthcare providers (Reeves et al., 2008).

There are several theories that can be applied to the healthcare setting. For example, agency theory has been used to explore relationships between doctors (Dranove & White, 1989) and the diffusion of innovation theory has been used to study individuals' adoption of new healthcare information technologies (Cain & Mittman, 2002). However, both theories have originally been developed for other purposes: Agency theory has been developed to focus on reducing problems emerging through the separation of business owners and managers (Panda & Leepsa, 2017) and the diffusion of innovation theory has been used to explain how an idea or product spreads through a specific population (Kaminski, 2011).

Instead, Normalisation Process Theory (NPT) has been specifically designed to assist researchers to understand the factors that promote and inhibit the routine implementation of complex healthcare interventions in practice (C. R. May et al., 2011). It is a relatively new theory (C. R. May et al., 2009), which provides a consistent framework that can be used to improve complex interventions (C. R. May et al., 2011). A recent qualitative systematic review found that NPT was applicable to a large range of interventions and service design, and that NPT was effective in aiding intervention development and in understanding implementation processes (C. R. May et al., 2018).

Pharmacy-based sexual and reproductive health services are complex interventions based on the requirements defined by Guise et al. (2017): They have multiple components (collection of patient information; consultation; service delivery) and multiple causal pathways (workload, training, skills, clinical case) (Guise et al., 2017). NPT was therefore considered as well suited to interpret the interview study findings.

NPT is concerned with understanding why and how new complex healthcare interventions become normal components of work as a result of people's actions (May and Finch, 2009). It was first iterated by May (2006) and then further developed. It consists of four main components: coherence (sense-making); cognitive participation (or engagement), collective action (actions done to enable the intervention to happen); and reflexive monitoring (formal and informal appraisal of the benefits and costs of the intervention) (Murray et al., 2010). All of the components can impact each other.

NPT is a *middle-range theory* (C. R. May et al., 2009) which means that it is, compared to *Grand Theories,* less abstract as it addresses specific phenomena and concepts that can be tested and used to inform intervention development (O'Donnell et al., 2017). Since implementation is

complex and there are many causes of outcomes it is unlikely that one grand theory of implementation will be developed that can provide universal explanations (Nilsen, 2015).

Two previously published systematic reviews showed that NPT was effective in evaluating the implementation of a diverse range of complex health interventions in several qualitative studies (C. R. May et al., 2018; McEvoy et al., 2014). Although many studies have only included service providers perspectives when applying NPT (McEvoy et al., 2014), it can be applied to both health professionals, such as pharmacy staff, but also service users, such as pharmacy users (C. R. May et al., 2011). This was advantageous as the aim of the qualitative study was to gain insight into both users' and staff perspectives.

Some theories focus only on evaluating and understanding individual attitudes and intentions. For example, the theory of planned behaviour attempts to predict an individual's intention to engage in an action at a specific time or place and does neither take into account the environmental factors and nor consider change over time (Sommer, 2011). These types of theories which focus on individuals are less suitable for evaluating complex interventions where various confounders can impact behaviour (Murray et al., 2010). Instead, NPT addresses both what individuals and groups do (McEvoy et al., 2014) and seeks to understand the work that staff and users are engaging with rather than to understand the relationship between individual attitudes and intentions (McEvoy et al., 2014). Hence, unlike other theories NPT does not only consider behaviour in isolation but also context and the practical implementation of interventions in real settings. It provides an explanatory model of how interventions become embedded and normalised based on the things that individuals and groups do (C. R. May et al., 2011).

In line with the diffusion of innovation theory, NPT addresses the legitimacy of the interventions and the roles of people involved and whether there is a trusting relationship between those involved in complex interventions (McEvoy et al., 2014). However, in contrast to the diffusion of innovation theory (Murray et al., 2010), which focuses only on whole systems, NPT also considers system components and additionally investigates processes impacting whether an innovation becomes routinely embedded in practice (McEvoy et al., 2014).

Hence, NPT is different from other theories as it can look at all participants involved in implementation processes, look at the work that participants do individually and collectively, and also help to understand the processes that lead to interventions becoming normalised (McEvoy et al., 2014). It was therefore considered to be an appropriate approach to explore the implementation of pharmacy-based sexual and reproductive health services.

Theories, including NPT, can be applied at different stages of the research process and in many different ways. For example, it can be used to design studies, structure them or as lens for interpretation (Wu & Volker, 2009). Pharmacy-based research has traditionally been lacking the

use of a theoretical lens, although it can aid data interpretation (D. Stewart & Klein, 2016). For this PhD project, NPT was therefore used as lens for interpretation of the qualitative interview findings.

Several methodologists have highlighted the importance to describe clearly how theory has been applied (Bradbury-Jones et al., 2014; D. Stewart & Klein, 2016). Section 7.10 therefore describes in detail how NPT was applied to interpret the findings from the qualitative study.

2.7. Approach for synthesising all findings to develop recommendations

The fourth and final objective of the thesis was as follows:

Objective 4:

- To synthesise all findings to develop recommendations for service optimisation

Data integration can be considered as the centrepiece of mixed methods research (O'Cathain, Murphy, & Nicholl, 2007), as it allows new insights and ensures the full exploitation of the available data (Bryman, 2006). Data integration can be done, for example, by using a framework to bind different datasets together (Creswell & Clark, 2017). Methods for synthesising mixed methods evidence have been developed (Noyes et al., 2019), however there are only a few well-articulated methods (R. E. Johnson et al., 2017).

One approach to synthesise quantitative and qualitative evidence is "Following a thread", developed by Moran-Ellis et al. (Moran-Ellis et al., 2006). However, it has not been used frequently in the literature and no specific steps for this technique are outlined (R. E. Johnson et al., 2017; O'Cathain et al., 2010). It was therefore not chosen as the approach for the data synthesis. Another method considered to synthesise evidence was "triangulation"; triangulation is well suited for synthesising evidence that examines different aspects of an overall research question (O'Cathain et al., 2010). Triangulation can help to identify whether one set of findings confirms or disconfirms another set of findings (Noble & Heale, 2019; O'Cathain et al., 2010) and can contribute to assessing the validity of research results (Farmer et al., 2006). It is a process of studying a phenomenon using different methods to gain a more in-depth understanding (Denzin, 2012; O'Cathain et al., 2010). Triangulation as a methodological approach to combine qualitative and quantitative results has been criticised as little guidance on how to carry out triangulation had been published. However, this gap in the literature was addressed through the publication of the "the triangulation protocol", which is the most detailed description of how to conduct triangulation (Farmer et al., 2006).

The "triangulation protocol" has been developed to carry out triangulation for multiple qualitative methods but can also be applied for mixed methods studies (O'Cathain et al., 2010). However, according to the triangulation protocol, multiple investigators have to undertake independent applications of the triangulation protocol and compare results. Different perspectives on

convergence or dissonance of findings between the researchers have to be noted down. As the PhD candidate was the sole researcher and did not have a team with time available, it was not possible to adopt this approach effectively.

Instead, the data synthesis was based on the "Pillar Integration Process", published by Johnson et al. (2017). This approach outlines four steps to integrate qualitative and quantitative data (R. E. Johnson et al., 2017). The advantage of the Pillar Integration Process is that it provides great flexibility in terms of the type of data that can be integrated (Quinton & Smallbone, 2010). However, there is no clear guidance on how and whether more than two datasets could be synthesised using the Pillar Integration Process (R. E. Johnson et al., 2017). In light of this, Dr Amy Grove, Assistant Professor at Warwick Medical School and co-developer of the Pillar-Integration-Process, was consulted. The way in which the Pillar Integration Process can be adapted for more than two datasets was discussed in depth, and the methods used to triangulate the data developed, generating furthered knowledge on the Pillar Integration Process. The methods used to synthesise data using the adapted Pillar Integration Process are described in detail in the respective chapter for transparency (see chapter 9).

2.8. Chapter summary

In this chapter, the methodological stance of the thesis was explained and the background to the methodological approach for the thesis was outlined. The thesis' aim and objectives were reiterated. In section 2.4, it was justified why a retrospective quantitative study was used to describe the utilisation of pharmacy-based sexual and reproductive health services. A justification for using a systematic review methodology to summarise what is known about pharmacy users' and pharmacy staff attitudes and experiences of pharmacy-based SRHS was provided in the subsequent section (2.5). Afterwards, it was explained why qualitative semi-structured interviews were used to explore pharmacy users' and pharmacy staff experiences and why NPT was used to interpret the qualitative findings (2.6). In the final section of this chapter (2.7), it was justified why the Pillar Integration Process was used to guide the integration of all findings from this thesis. In the following chapter the methods of the retrospective study are described.

3. Retrospective Quantitative Study Methods

3.1. Chapter overview

This chapter outlines the methods for the retrospective quantitative study. Beginning with the aims, objectives and study design, it then explains how the routine pharmacy data analysed in the study was collected and processed. Inclusion criteria, analysis methods, ethical considerations and approvals are described. The chapter ends with a short chapter summary.

3.2. Aim & Objectives for the retrospective study

3.2.1. Aim

- To describe the utilisation of pharmacy-based sexual and reproductive health services (SRHS) using a retrospective quantitative study

3.2.2. Objectives

- To describe the uptake of six SRHS encompassing contraception, testing and treatment for sexually transmitted infections
- To describe the characteristics of those using pharmacy-based SRHS
- To describe the attendance patterns of SRHS requests according to the day of the week
- To describe the outcomes of pharmacy-based emergency contraception, oral contraception, condom provision and chlamydia treatment

3.3. Study Design

A retrospective quantitative study was performed to evaluate all SRHS requests made by users at *Umbrella* pharmacies between August 2015 and August 2018. The study was published in the journal Sexually Transmitted Infections on the 16th August 2020. A copy of this paper is provided in Appendix 1.

3.4. *Umbrella*'s pharmacy-based SRHS

As described in section 1.7, the sexual and reproductive health services (SRHS) branded as *Umbrella* was launched in Birmingham (England) in August 2015. *Umbrella* provides services related to sexually transmitted infections and contraception through several pathways, including pharmacies, free of costs for the users.

Pharmacies operate either at 'Tier 1' or 'Tier 2' level. The number of *Umbrella* pharmacies changed over time: Between August 2015 and August 2018 the number of 'Tier 1' pharmacies decreased from 158 to 80.

However, the number of pharmacies offering more extensive 'Tier 2' services increased from 18 to 47. The services provided in 'Tier 1' and 'Tier 2' pharmacies are described in the following two sections (section 3.4.1 and 3.4.2). The eligibility criteria for *Umbrella's* pharmacy services are described in section 3.4.3. An overview of *Umbrella's* pharmacy services is provided in Table 5.

3.4.1. 'Tier 1' pharmacies

'Tier 1' pharmacies offer prescription-free emergency contraception consultations. Possible outcomes of emergency contraception consultation include: advice only; supply of an emergency contraceptive pill (either containing levonorgestrel or ulipristal); supply of an emergency contraceptive pill and a copper coil referral or appointment at the closest sexual health clinic; or a copper coil referral/appointment only. 'Tier 1' pharmacies also provide condoms. As part of the consultation on condoms, pharmacy staff can offer and provide pharmacy users with instructions on how to correctly use condoms. Moreover, 'Tier 1' pharmacies dispense STI self-sampling kits testing for chlamydia, gonorrhoea, HIV and syphilis, plus Hepatitis B (for men who have sex with men) that have been pre-ordered by pharmacy users to a 'Tier 1' pharmacy or a sexual health clinic via the *Umbrella* website. Alternatively, users could also order an STI self-sampling kit to be posted to their home. Pharmacy staff working at 'Tier 1' pharmacies also have STI self-sampling kits testing for chlamydia and gonorrhoea in stock and can provide them directly to young women (15-24-year olds) presenting for emergency contraception.

3.4.2. 'Tier 2' pharmacies

'Tier 2' pharmacies offer all 'Tier 1' services and in addition prescription-free oral contraception, contraceptive injection and chlamydia treatment. When providing oral contraception, pharmacy staff can either supply a progesterone-only pill (POP) or a combined pill, containing both oestrogen and progesterone (Casper, 2017). The contraceptive injection provided by *Umbrella* was Sayana® Press (Nai et al., 2020). Two different antibiotics, doxycycline (1st line treatment) or azithromycin (2nd line treatment), can be supplied to pharmacy users as chlamydia treatment.

In contrast to 'Tier 1' pharmacies, 'Tier 2' pharmacies not only have STI self-sampling kits testing for chlamydia and gonorrhoea but also STI self-sampling kits testing for chlamydia, gonorrhoea, HIV, syphilis and hepatitis B in stock and can provide them directly to pharmacy users. However, pharmacy users can also choose to pre-order a STI self-sampling kit to a 'Tier 2' pharmacy. Finally, 'Tier 2' pharmacies can offer women presenting for emergency contraception with one emergency contraceptive pill that they can take immediately and one that they can take away for future use (also referred to as advance emergency contraception).

3.4.3. Eligibility criteria for *Umbrella's* services

Umbrella's pharmacy services can be used by those who meet certain eligibility criteria (see Table 5). Hormonal contraception such as emergency contraception, oral contraception and the contraceptive injection are restricted to females only, but males can access the pharmacy for condoms, STI self-sampling kits and chlamydia treatment.

All services except the STI self-sampling kits are accessible to users over the age of 13. The upper age limit for hormonal contraception is 60 years. For the remaining services there is no upper age limit. STI self-sampling kits can only be pre-ordered by over 16-year olds. However, women who are between 15 and 24 years old and presenting for emergency contraception can be provided with a STI self-sampling kit testing for chlamydia and gonorrhoea.

3.5. Routine data collection

Although recording pharmacy staff activities can be helpful, for example to monitor the workload, it is not routine practice (Wright & Twigg, 2016). However, *Umbrella* collects and owns data on all their pharmacy services and is licensed to use the data for any legitimate purpose in anonymised form.

Data on *Umbrella's* pharmacy services is primarily recorded by pharmacy staff on behalf of *Umbrella* in order to receive payment for the *Umbrella* services provided. However, it is also collected for quality assurance, for example to ensure that young people can be safeguarded and to get an overview of who is reached by pharmacy-based sexual and reproductive health services.

Data analysed in this study were available from two data sources. Information on the data sources used for the retrospective study is provided in the following section.

3.5.1. Data sources

The first data source used for this retrospective study was PharmOutcomes®, which is a secure web-based service record platform provided by Pinaccle Health Partnership LLP (R. Brown, 2018; Sabir et al., 2019). It allows pharmacies to store all information relating to the services delivered (R. Brown, 2018). Although PharmOutcomes® is not used universally across England (Mantzourani et al., 2020), it is used by more than 85% of pharmacies in England (R. Brown, 2018).

The second data source was the *Umbrella* website, which was linked with STI self-sampling orders (Banerjee et al., 2018; Jewell et al., 2017). In order to request an STI self-sampling kit people had to complete a secure Online Patient Questionnaire placed on the *Umbrella* website (Umbrella, 2020).

When people attended an *Umbrella* pharmacy for emergency contraception, oral contraception, contraceptive injection, condoms or chlamydia treatment, they were taken into a consultation room by pharmacy staff, who then recorded demographic and clinical information on PharmOutcomes®.

Data on those users who were provided with an STI self-sampling kit directly in the pharmacy (without having pre-ordered it on the *Umbrella* website) were recorded on PharmOutcomes® before the 6th of February 2018 and via the *Umbrella* website thereafter. Data on STI self-sampling kits that were pre-ordered online were consistently collected via the Online Patient Questionnaire on the *Umbrella website*.

The information that was collected and analysed for this study and the data sources for each *Umbrella* service is shown in Table 5.

3.5.2. Data collection

The day of the week and date of service request is automatically collected when pharmacy staff record an *Umbrella* service. While information on the day of the week those services were delivered was shared with the PhD candidate, the dates of service requests were not provided by *Umbrella.*

Each user of an *Umbrella* pharmacy service was automatically assigned a patient identification number. If a user returned to the same pharmacy to use an *Umbrella* service, this was registered under the original patient identification number. However, if a pharmacy user subsequently visited a different *Umbrella* pharmacy, this was recorded under a new patient identification number. Hence, patient records were not integrated and since individuals could have been recorded under different patient identification numbers it was not possible to evaluate frequency of attendance for individual patients.

Pharmacy staff recorded the type of *Umbrella* service that was provided to a pharmacy user and the consultation outcomes. If an individual used more than one of the 'Tier 1' or 'Tier 2' services (e.g. emergency contraception and condoms), this was recorded as separate requests. Because of this, and also because the dates of service requests were not provided to the PhD candidate, it was therefore not possible to evaluate whether multiple services were delivered at a single attendance or over several pharmacy visits.

Service users are required to provide a name, their age and a Birmingham postcode to be able to get a service. However, since no proof of identify is required, service users who wished to remain anonymous could provide any name, age and Birmingham postcode of their choice.

Pharmacy users are also asked for their gender and ethnicity but can choose not to disclose this information. When asked for their gender, users had the possibility to self-identify as female, male or transgender. Data on gender were reported in this study as recorded by *Umbrella*. Ethnicity data were collected consistently for all services except the STI self-sampling kits. Inconsistencies in the data collection meant that it was not possible to analyse ethnicity data on STI self-sampling kits. No ethnicity data were collected until March 2017 and subsequently different ethnic group categories were used. Ethnicity data were therefore only analysed for individuals accessing the other sexual health services: emergency contraception, oral contraception, contraceptive injection, condoms and chlamydia treatment.

For the STI self-sampling kits that were pre-ordered online, the date that the kit was collected rather than pre-ordered was recorded. No data on the dates that STI self-sampling kits were pre-ordered were recorded, so it was not possible to analyse how many days passed between users' pre-order and collection of the STI self-sampling kits.

TABLE 5 OVERVIEW OF *UMBRELLA* SERVICES, ELIGIBILITY CRITERIA, DATA SOURCE AND ASSOCIATED DATA INCLUDED IN ANALYSIS

SRHS Provided	Pharmacy 'Tier'	Eligibility by Gender	Eligibility by Age	Data Source	Associated data included in this analysis
Emergency Contraception	Tier 1 and Tier 2	Females	13-60	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance • Consultation Outcome
Advance Emergency Contraception	Tier 2	Females	13-60	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance • Consultation outcome
Referral or Appointment for the copper coil at closest sexual health clinic	Tier 1 & Tier 2	Females	13-60	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance • Consultation Outcome
Oral Contraception	Tier 2	Females	13-60	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance • Consultation Outcome
Contraceptive Injection	Tier 2	Females	13-60	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance

Condoms	Tier 1 and Tier 2	Females and Males	≥13	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance
Collection of pre-ordered STI self-sampling kits testing for up to five STIs	Tier 1 and Tier 2	Females and Males	≥16	Online Patient Questionnaire (*Umbrella* Website)	• Age • Gender • Weekday of attendance
STI self-sampling kits testing for up to five STIs	Tier 2	Females and Males	≥16	Pharmacy Electronic Patient Record (PharmOutcomes®) until 6th Feb 2018 and Pharmacy Online Patient Questionnaire (*Umbrella* Website) from 7th Feb 2018 onwards	• Age • Gender • Weekday of attendance
Chlamydia & Gonorrhoea STI self-sampling kit supplied to women presenting for emergency contraception	Tier 1 and Tier 2	Females	15-24	Pharmacy Electronic Patient Record (PharmOutcomes®) until 6th Feb 2018 and Online Patient Questionnaire (*Umbrella* Website) from 7th Feb 2018 onwards	• Age • Gender • Weekday of attendance
Chlamydia Treatment	Tier 2	Females and Males	≥13	Pharmacy Electronic Patient Record (PharmOutcomes®)	• Age • Gender • Ethnicity • Weekday of attendance

3.6. Data processing

User activity recorded on PharmOutcomes® and the *Umbrella* website were combined into a single dataset. Although National Statistical Institutes from various countries including the UK have proposed standardised categories to classify people into ethnic groups, there is no widely accepted protocol for the collection of ethnicity (Connelly et al., 2016). Based on the ethnic groups listed by UK's government website (GOV.UK, 2020), ethnicity was grouped from more than 20 categories into five categories: White/White British, Black/Black British, Asian/Asian British, Mixed/Mixed British, Other Ethnic Group. Age plays an important role in health research as a person's age can indicate whether someone is at a higher risk of a certain condition (Geifman et al., 2013). For example, while women and men of all ages can face challenges related to their sexual and reproductive health (Gonsalves & Hindin, 2017), adolescents are at higher risk of contracting STIs (Morris & Rushwan, 2015). Ages are often presented in groups in health research (Geifman et al., 2013). The age groups chosen for this retrospective study were informed by another study on pharmacy-based sexual and reproductive health services (Mantzourani et al., 2019). They are as follows: 13-15, 16-19, 20-24, 25-29, 30-39 and 40+. The final dataset included:

- PharmOutcomes® data on all user requests recorded for: emergency contraception, oral contraception, contraceptive injection, chlamydia treatment, and condoms between August 2015 and August 2018
- PharmOutcomes® data (recorded between August 2015 and the 6th February 2018) and STI website data (recorded between the 7th February 2018 and August 2018) on all STI self-sampling kits that were provided directly to users
- STI website data on all STI self-sampling kits that were ordered online and collected from a pharmacy between August 2015 and August 2018

3.7. Inclusion Criteria

As mentioned in the description of *Umbrella* and their pharmacy-based SRHS, individuals were eligible for an *Umbrella* pharmacy service if they fulfilled the inclusion criteria for the service in question:

- The age of users requesting condoms or chlamydia treatment was ≥13
- The gender of users of hormonal contraception was female
- The age of females provided with hormonal contraception was ≥13 and ≤60
- The age of users requesting STI self-sampling kits online was ≥16
- The age of males who were provided with an STI self-sampling kit was ≥16 and the age of women provided with STI self-sampling kit was ≥15

Only those service records which met *Umbrella's* inclusion criteria were included in the analysis. This decision was based on the assumption that data entries which did not meet *Umbrella*'s inclusion criteria included errors that occurred when pharmacy staff were entering the data. However, it may be also be possible that services were provided to pharmacy users although they did not meet *Umbrella*'s inclusion criteria. The system into which pharmacy staff input the patient data does not notify them if information outside of the inclusion criteria is entered.

3.8. Data Analysis

Descriptive statistics are often used in studies on health care utilisation (Burkard et al., 2019; Otterstatter et al., 2018). For this study, both categorical data and continuous data was used. Continuous variables are those that can be measured and theoretically take infinitely many values (Mayya et al., 2017). In this study, age was the only continuous data used. Categorical data are data which are not numerically measurable but can be allocated to different groups (Mayya et al., 2017). Examples for categorical data used in this study include ethnicity, gender, age groups, and types of service. Frequency statistics such as counts and percentages were used to summarise categorical variables (Mishra et al., 2019). The continuous variable 'age' was summarised by reporting the range, median and interquartile range in order to describe the spread of the data distribution (M. J. Fisher & Marshall, 2009). The range described the distance between the highest and lowest score, whereas the median described the middle score of a rank ordered distribution (M. J. Fisher & Marshall, 2009). While the median, mean and mode will have the same value if data is normally distributed, this is not the case in a skewed distribution (McHugh & Hudson‐Barr, 2003). For this study, the median age rather than the mean age was reported as it is usually the most accurate indicator of central tendency skewed distributions (McHugh & Hudson‐Barr, 2003). The interquartile range is reported together with the median as it can further help to describe the central tendency by showing the range within which the middle 50% of the scores fall (M. J. Fisher & Marshall, 2009; McHugh & Hudson‐Barr, 2003).

To date there is little information on who the users of pharmacy-based SRHS are. Therefore, the distribution of age, ethnicity and attendance pattern by the day of the week were additionally analysed by gender.

The date (day, month, year) of attendance was requested but was not available from the service provider, despite a number of requests, due to concerns regarding data confidentiality. This prevented the analysis of the uptake of services over time. Without having the date of service request, it was also not possible to analyse whether pharmacy users had been provided with several sexual and reproductive health services on the same day.

The potential for further statistical analysis such as assessing statistically significant associations between categorical variables using tests such as the "Kruskal Wallis test" (Jaber et al., 2017), "chi-squared test" (Zhu & Fang, 2016) or "ANOVA test" (Kim, 2017) was discussed with Peter K

Kimani (P.K.K.), Associate Professor in Medical Statistics at Warwick Medical School. However, this was not possible as all the named tests require independent groups (Jaber et al., 2017; Kim, 2017; Zhu & Fang, 2016). Independent groups are groups in which the participants, in this case the pharmacy users, are different. However, pharmacy users may have requested the same SRHS repeatedly (e.g. emergency contraception) or obtained several SRHS (e.g. emergency contraception, STI self-sampling kits and condoms). Since pharmacy users are provided a new patient identification number whenever they enter a different *Umbrella* pharmacy, it was not possible to identify individuals in the dataset. Hence, independent groups could not be guaranteed as individuals could not be identified in the dataset and may have been in more than one group.

The data analysis was conducted using IBM® SPSS Statistics software (SPSS®) version 24, which is a statistical package produced by IBM, Inc. (Cronk, 2019).

3.9. Ethical Considerations and Approvals

Ensuring data privacy and data security is an important part of research (Zhang, 2018). For this study, the information governance team of the University Hospitals Birmingham (UHB) NHS Foundation Trust helped to set the criteria for processing the information to ensure patient anonymity was maintained in all circumstances. Since the PhD candidate did not have an honorary contract with the UHB Trust and did not have an UHB email account, extra safety measures were taken. For reasons of privacy protection, patients' names and addresses, and the day and month of birth were deleted from the dataset. Although requested, no dates of service request were provided. A data sharing agreement between the University Hospitals NHS Foundation Trust and the University of Warwick was signed by both parties. The datasets were then sent to the researcher via email in a password-protected file. The password was communicated on the phone. All data from the study will be stored for 10 years (until 2029) in accordance with the University's Records Retention Schedule. Electronic data will continue to be stored on a secure, password-protected device in password protected files. Access to the files is restricted to the research team members.

There was a level of uncertainty whether NHS Ethical approval would be needed for the retrospective study. A Health Research Authority (HRA) assistant stated that the retrospective quantitative study was exempt from NHS Research Ethics Committee (REC) Review as only anonymised patient data was used. However, the Ethics Board from the University of Warwick advised to apply for NHS ethical approval for both the retrospective study and the interview study. Ethical considerations and issues regarding the interview study are discussed in the respective chapter (Chapter 7).

We therefore obtained approval from the South Central – Oxford B Research Ethics Committee (REC) and from the Health Research Authority (HRA) (Rec Reference: 18/SC/0511). Further, approval from the University Hospitals Birmingham NHS Foundation Trust was obtained prior to the beginning of the study (Ref number: RKK6366).

3.10. Chapter summary

This chapter presented the retrospective quantitative study methods. It started by presenting the aim and objectives of the retrospective quantitative study, the overall aim of the study being to describe the utilisation of pharmacy-based sexual and reproductive health services. It was then outlined that a retrospective study was used to address this aim. To provide context to the reader, information on *Umbrella*'s pharmacy-based sexual and reproductive health services were provided. Next, it was explained how, and which type of data was collected on behalf of *Umbrella* in the pharmacy. It was then outlined, that demographic characteristics (age, gender, ethnicity) as well as weekday of attendance and consultation outcomes were analysed for the retrospective study. It was then explained how data was processed. Once it was clarified that only data that met *Umbrella's* inclusion criteria were included in the analysis, it was explained that data was analysed descriptively for the retrospective study. At the end of the chapter, it was shown that NHS Ethical Approval, HRA approval as well as approval from the University Hospitals Birmingham NHS Foundation Trust was obtained prior to the beginning of the retrospective study. In the next chapter (chapter 4), the findings of the retrospective study will be presented and discussed.

4. Retrospective Study Results and Discussion

4.1. Chapter overview

This chapter provides the results and discussion of the retrospective quantitative study. The cases selected for analysis are presented and the findings on the service use, demographic characteristics, attendance patterns by day of week and consultation outcomes are outlined. The key findings are then summarised, and strengths and weaknesses of the retrospective study are discussed. A comparison of the findings with the existing literature is offered. Afterwards, the contribution of the retrospective quantitative study is outlined. The chapter closes with a short chapter summary.

4.2. Results

4.2.1. Cases selected for analysis

Overall, there were 60573 data entries recorded between August 2015 and August 2018. Less than 1% of data entries (n=75) were excluded from the analysis as they did not meet the pharmacy service eligibility criteria:

- User recorded as being under 13-year olds (n=13)
- Hormonal contraception recorded as being accessed by men (n=59)
- Hormonal contraception recorded as being accessed by women over the age of 60 (n=3).

The remaining 60498 data entries were included in the analysis. As mentioned in the methods section, no ethnicity data were available for the STI self-sampling kits. As pharmacy users had the option not to provide some personal details, data on the gender and ethnicity of pharmacy users' was sometimes indicated to be 'unknown'. However, data on pharmacy users' age and the day of service request were complete.

4.2.2. Service Use

Emergency contraception (50.4%, 30473/60498), condoms (33.1%, 19998/60498) and STI self-sampling kits (9.6%, 5830/60498) accounted for more than 90% of all visits for *Umbrella*'s pharmacy services. The three least accessed *Umbrella* pharmacy services were the contraceptive injection (0.6%, 359/60498), chlamydia treatment (1.0%, 591/60498) and oral contraception (5.4%, 3247/60498).

4.2.3. Demographic Characteristics

An overview of the demographic characteristics of *Umbrella*'s service users between August 2015 and August 2018 is provided in Table 6. Information on the age-distribution, ethnicity-distribution, by gender can be found in Table 7.

Gender

As mentioned in section 3.5.2., pharmacy users could self-assign their gender as female, male, or transgender. Alternatively, they could choose not to disclose their gender. Gender is reported in this section as collected by *Umbrella*. Services were most likely to be requested by females (85.6%, 51780/60498). The majority of service requests were made by females for contraception (78.2%, 47354/60498). Males only accounted for 14.2% (8597/60498) of all service requests. Females also made up the majority of service requests for those services that were accessible for both sexes: condoms (females: 66.4% (13286/19998) versus males: 33.1% (6610/19998)), STI self-sampling kits (females: 69.4% (4044/5830) versus males: 30.5% (1781/5830)) and chlamydia treatment (females: 64.6% (382/591) versus males: 34.9% (206/591)). Females were more likely to be provided with an STI self-sampling kit directly from the pharmacy (60.6%, 2450/4044) rather than to order an STI self-sampling kit online (39.4%, 1594/4044). In total, 15 transgender people attended pharmacy-based sexual and reproductive health services between August 2015 and August 2018.

Age

People between 16 and 24 years accounted for more than 50% of all service requests. For all services consistently, 16-24-year-old females and males accounted for the largest number of service requests.

The median age of service users across all services was 24 years [Interquartile range: 20-30]. The youngest users were 13 and the oldest 86 years old. The median age was lowest for users who were provided with STI self-sampling kits with 21 years [Interquartile range: 20-27] and highest for emergency contraception users with 25 years [IQR: 20-29].

For all age groups the most frequent presentation at a pharmacy was for emergency contraception; with the only exemption being 13- to 15-year-olds, who most frequently accessed the pharmacy for condoms (50.86%, 296/582).

Ethnicity

As mentioned in the methods section, ethnicity data were not available for pharmacy users who requested a STI self-sampling kit (n=5830/60498) due to inconsistencies in the data collection. However, ethnicity data was available for all remaining service requests (n=54668/60498).

Overall, pharmacy-based SRHS were most likely to be used by White/White British (43.3%, 23742/54668) and Asian/Asian British people (23.1%, 12603/54668), followed by Black/Black British people (15.1%, 8278/54668), people from Mixed ethnic backgrounds (6.4%, 3490/54668) and other ethnic groups (2.0%, 1078/54668).

4.2.4. Attendance patterns by day of week

An overview of the attendance patterns by day of week is provided in Table 6. An overview of the weekday that the service was received by gender is provided in Table 7.

All services except the contraceptive injection and chlamydia treatment were most frequently accessed on Monday, which was the most common day to present in a pharmacy for a SRHS overall (20.9%, 12657/60498).

Service requests were lowest on a Saturday (12.2%, 7375/60498) and Sunday (5.0%, 3013/60498). Most requests on Saturday (57%, 4206/7375), Sunday (67.6%, 2035/3013) and Monday (54.4%, 6894/12657) were made by women presenting for emergency contraception.

Females were most likely to request emergency contraception, condoms and STI self-sampling kits on Mondays, and chlamydia treatment and the contraceptive injection on Wednesday. In contrast, males were most likely to obtain condoms and chlamydia treatment on Fridays and STI self-sampling kits on Tuesdays.

TABLE 6 UPTAKE, USER DEMOGRAPHICS, AND WEEKDAY OF ATTENDANCE OF PHARMACY-BASED SRHS

Characteristics	Service contacts	Type of service							
		Emergency Contraception	Oral Contraception	Contraceptive Injection	Condoms	STI self-sampling kit			Chlamydia Treatment
						Total	Provided directly (without pre-ordering)	Pre-ordered and collected	
Total, n (% by row)	60498[1] (100)	30473 (50.4)	3247 (5.4)	359 (0.6)	19998 (33.1)	5830 (9.6)	3324 (57)	2506 (43)	591 (1.0)
Gender, n (% by column)									
Females	51780 (85.6)	30464 (100)	3245 (99.9)	359 (100)	13286 (66.4)	4044 (69.4)	2450 (60.6)	1594 (39.4)	382 (64.6)
Males	8597 (14.2)	-	-	-	6610 (33.1)	1781 (30.5)	869 (48.8)	912 (51.2)	206 (34.9)
Transgender	15 (0)	2 (0)	1 (0)	-	10 (0.1)	1 (0)	1 (100)	-	1 (0.2)
Unknown	106 (0.2)	7 (0)	1 (0)	-	92 (0.5)	4 (0.1)	4 (100)	-	2 (0.3)
Ethnicity, n (% by column)									
White/White British	23742* (43.4)	12383 (40.6)	1918 (59.1)	159 (44.3)	9003 (45)	N/A	N/A	N/A	279 (47.2)
Asian/Asian British	12603* (23.1)	7478 (24.5)	450 (13.9)	33 (9.2)	4612 (23.1)	N/A	N/A	N/A	30 (5.1)
Black/Black British	8278* (15.1)	4964 (16.3)	427 (13.2)	67 (18.7)	2715 (13.6)	N/A	N/A	N/A	105 (17.8)
Mixed/Multiple Ethnic Groups	3490* (6.4)	2133 (7.0)	173 (5.3)	18 (5.0)	1109 (5.5)	N/A	N/A	N/A	57 (9.6)
Other Ethnic Groups	1078* (2.0%)	571 (1.9)	50 (1.5)	19 (5.3)	429 (2.1)	N/A	N/A	N/A	9 (1.5)

[1] In total, 75 requests (0.1%, 75/60573) were excluded from the analysis because they did not meet the pharmacy service eligibility criteria

Unknown	5477* (10.0)	2944 (9.7)	229 (7.1)	63 (17.5)	2130 (10.7)	N/A	N/A	N/A	111 (18.8)
Age (years)									
Range (Min-Max)	13-86	13-59	13-56	16-49	13-86	16-78	16-78	16-72	16-54
Median (IQR)	24 (20-30)	25 (20-29)	24 (20-30)	25 (21-31)	24 (20-33)	22 (20-277)	21 (20-25)	24 (21-30)	23 (20-27)
Age groups, n (% by column)									
13-15	582 (1.0)	267 (0.9)	19 (0.6)	-	296 (1.5)	-	-	-	-
16-19	11765 (19.4)	6223 (20.4)	542 (16.7)	43 (12.0)	3707 (18.5)	1130 (19.4)	735 (22.1)	395 (15.8)	120 (20.3)
20-24	20834 (34.4)	10740 (35.2)	1156 (35.6)	117 (32.6)	6025 (30.1)	2535 (43.5)	1638 (49.3)	897 (35.8)	261 (44.2)
25-29	11061 (18.3)	6209 (20.4)	645 (19.9)	85 (23.7)	2961 (14.8)	1034 (17.7)	467 (14)	567 (22.6)	127 (21.5)
30-39	11786 (19.5)	5715 (18.8)	608 (18.7)	84 (23.4)	4550 (22.8)	767 (13.2)	334 (10)	433 (17.3)	62 (10.5)
40+	4470 (7.4)	1319 (4.3)	277 (8.5)	30 (8.4)	2459 (12.3)	364 (6.2)	150 (4.5)	214 (8.5)	21 (3.6)
Day of week accessed, n (% by column)									
Monday	12657 (20.9)	6894 (22.6)	599 (18.4)	46 (12.8)	3935 (19.7)	1102 (18.9)	645 (19.4)	457 (18.2)	81 (13.7)
Tuesday	10249 (16.9)	4952 (16.3)	588 (18.1)	63 (17.5)	3515 (17.6)	1049 (18.0)	602 (18.1)	447 (17.8)	82 (13.9)
Wednesday	8999 (14.9)	4223 (13.9)	505 (15.6)	73 (20.3)	3268 (16.3)	828 (14.2)	449 (13.5)	379 (15.1)	102 (17.3)
Thursday	8970 (14.8)	4043 (13.3)	586 (18.0)	71 (19.8)	3325 (16.6)	844 (14.5)	445 (13.4)	399 (15.9)	101 (17.1)
Friday	9235 (15.3)	4120 (13.5)	591 (18.2)	63 (17.5)	3384 (16.9)	968 (16.6)	639 (19.2)	329 (13.1)	109 (18.4)
Saturday	7375 (12.2)	4206 (13.8)	293 (9.0)	37 (10.3)	2021 (10.1)	719 (12.3)	440 (13.2)	279 (11.1)	99 (16.8)
Sunday	3013 (5.0)	2035 (6.7)	85 (2.6)	6 (1.7)	550 (2.8)	320 (5.5)	104 (3.1)	216 (8.6)	17 (2.9)

* Total number of (%) of service requests of all services except STI self-sampling kits. N/A= not available

TABLE 7 AGE-DISTRIBUTION, ETHNICITY-DISTRIBUTION, WEEKDAY OF SERVICE RECEIVED BY GENDER

Gender	Service	Age group	Frequency (%)	Ethnicity	Frequency (%)	Weekday of Attendance	Frequency (%)
Females	**Emergency contraception (n=30464)**	13-15	267 (0.9)	White/White British	12380 (40.6)	Monday	6893 (22.6)
		16-19	6223 (20.4)	Asian/Asian British	7475 (24.5)	Tuesday	4951 (16.3)
		20-24	10734 (35.2)	Black/Black British	4964 (16.3)	Wednesday	4223 (13.9)
		25-29	6208 (20.4)	Mixed/Multiple Ethnic Groups	2133 (7.0)	Thursday	4040 (13.3)
		30-39	5713 (18.8)	Other Ethnic Groups	571 (1.9)	Friday	4119 (13.5)
		40+	1319 (4.3)	Unknown	2941 (9.7)	Saturday	4203 (13.8)
						Sunday	2035 (6.7)
	Oral contraception (n=3245)	13-15	19 (0.6)	White/White British	1917 (59.1)	Monday	599 (18.5)
		16-19	541 (16.7)	Asian/Asian British	449 (13.8)	Tuesday	587 (18.1)
		20-24	1156 (35.6)	Black/Black British	427 (13.2)	Wednesday	505 (15.6)
		25-29	644 (19.8)	Mixed/Multiple Ethnic Groups	173 (5.3)	Thursday	585 (18.0)
		30-39	608 (18.7)	Other Ethnic Groups	50 (1.5)	Friday	591 (18.2)
		40+	277 (8.5)	Unknown	229 (7.1)	Saturday	293 (9.0)
						Sunday	85 (2.6)
	Contraceptive Injection (n=359)	13-15	-	White/White British	159 (44.3)	Monday	46 (12.8)
		16-19	43 (12.0)	Asian/Asian British	33 (9.2)	Tuesday	63 (17.5)
		20-24	117 (32.6)	Black/Black British	67 (18.7)	Wednesday	73 (20.3)
		25-29	85 (23.7)	Mixed/Multiple Ethnic Groups	18 (5.0)	Thursday	71 (19.8)
		30-39	84 (23.4)	Other Ethnic Groups	19 (5.3)	Friday	63 (17.5)
		40+	30 (8.4)	Unknown	63 (17.5)	Saturday	37 (10.3)
						Sunday	6 (1.7)
	Condoms (n=13286)	13-15	109 (0.8)	White/White British	6425 (48.4)	Monday	2777 (20.9)
		16-19	2427 (18.3)	Asian/Asian British	2923 (22.0)	Tuesday	2343 (17.6)
		20-24	4370 (32.9)	Black/Black British	1755 (13.2)	Wednesday	2145 (16.1)
		25-29	2227 (16.8)	Mixed/Multiple Ethnic Groups	825 (6.2)	Thursday	2122 (16.0)
		30-39	3132 (23.6)	Other Ethnic Groups	217 (1.6)	Friday	2083 (15.7)
		40+	1021 (7.7)	Unknown	1141(8.6)	Saturday	1435 (10.8)
						Sunday	381 (2.9)
	STI self-sampling kits (n=4044)	13-15	-	White/White British	N/A	Monday	779 (19.3)
		16-19	886 (21.9)	Asian/Asian British	N/A	Tuesday	699 (17.3)
		20-24	1847 (45.7)	Black/Black British	N/A	Wednesday	559 (13.8)
		25-29	656 (16.2)	Mixed/Multiple Ethnic Groups	N/A	Thursday	578 (14.3)
		30-39	480 (11.9)	Other Ethnic Groups	N/A	Friday	693 (17.1)
		40+	175 (4.3)	Unknown	N/A	Saturday	513 (12.7)
						Sunday	223 (5.5)
	Chlamydia Treatment (n=382)	13-15	-	White/White British	203 (53.1)	Monday	56 (14.7)
		16-19	96 (25.1)	Asian/Asian British	13 (3.4)	Tuesday	52 (13.6)
		20-24	179 (46.9)	Black/Black British	63 (16.5)	Wednesday	71 (18.6)
		25-29	73 (19.1)	Mixed/Multiple Ethnic Groups	39 (10.2)	Thursday	69 (18.1)
		30-39	27 (7.1)	Other Ethnic Groups	5 (1.3)	Friday	68 (17.8)

		40+	7 (1.8)	Unknown	59 (15.4)	Saturday	57 (14.9)
						Sunday	9 (2.4)
Males	**Condoms (n=6610)**	13-15	187 (2.8)	White/White British	2550 (38.6)	Monday	1146 (17.3)
		16-19	1261 (19.1)	Asian/Asian British	1670 (25.3)	Tuesday	1153 (17.4)
		20-24	1630 (24.7)	Black/Black British	951 (14.4)	Wednesday	1102 (16.7)
		25-29	730 (11.0)	Mixed/Multiple Ethnic Groups	283 (4.3)	Thursday	1189 (18.0)
		30-39	1373 (20.8)	Other Ethnic Groups	211 (3.2)	Friday	1277 (19.3)
		40+	1429 (21.6)	Unknown	945 (14.3)	Saturday	577 (8.7)
						Sunday	166 (2.5)
	STI self-sampling kits (n=1781)	13-15	-	White/White British	N/A	Monday	323 (18.1)
		16-19	243 (13.6)	Asian/Asian British	N/A	Tuesday	348 (19.5)
		20-24	686 (38.5)	Black/Black British	N/A	Wednesday	268 (15.0)
		25-29	378 (21.2)	Mixed/Multiple Ethnic Groups	N/A	Thursday	266 (14.9)
		30-39	285 (16.0)	Other Ethnic Groups	N/A	Friday	274 (15.4)
		40+	189 (10.6)	Unknown	N/A	Saturday	205 (11.5)
						Sunday	97 (5.4)
	Chlamydia Treatment (n=206)	13-15	-	White/White British	76 (36.9)	Monday	25 (12.1)
		16-19	23 (11.2)	Asian/Asian British	16 (7.8)	Tuesday	30 (14.6)
		20-24	80 (38.8)	Black/Black British	42 (20.4)	Wednesday	30 (14.6)
		25-29	54 (26.2)	Mixed/Multiple Ethnic Groups	18 (8.7)	Thursday	32 (15.5)
		30-39	35 (17.0)	Other Ethnic Groups	4 (1.9)	Friday	41 (19.9)
		40+	14 (6.8)	Unknown	50 (24.3)	Saturday	40 (19.4)
						Sunday	8 (3.9)
N/A= Not available							

4.2.5. Consultation Outcomes

An overview of the consultation outcomes of condoms, chlamydia treatment and emergency contraception consultations is presented in Table 8. Most people attending for chlamydia treatment were provided with the antibiotic doxycycline (76.8%, 545/591) rather than the antibiotic azithromycin (20.0%, 118/591). More people requesting oral contraception were provided with the progesterone-only-pill (54.3%, 1764/3247) rather than the combined pill (44.4%, 1442/3247). Most people attending for condoms were not provided with condom instructions (74.4%, 14888/19998). The large majority of people presenting for an emergency contraception consultation were supplied with the emergency contraceptive pill (98.3%, 29961/30473). Only a small number of women had an additional copper coil referral or appointment (0%, 4/3247), or were only provided with a copper coil referral or advice only (0.1%, 8/30473).

TABLE 8 CONSULTATION OUTCOMES

Overview of consultation outcomes		
***Umbrella* services and their outcomes**	**Frequency (n)**	**Percentage (%)**
Chlamydia Treatment	591	100
Azithromycin	118	20.0
Doxycycline	454	76.8
Unknown	19	3.2
Oral Contraception	3247	100
Progesterone-Only-Pill	1764	54.3
Combined Pill	1442	44.4
Unknown	41	1.3
Emergency Contraception Consultation	30473	100
Emergency Contraceptive Pill	29961	98.3
Emergency Contraceptive Pill and coil appointment	4	0
Emergency Contraceptive Pill and coil referral	87	0.3
Advice Only	34	0.1
Copper coil referral	8	0
Unknown	378	1.2
Condom Instructions	19998	100
Yes	1331	6.7
No	14888	74.4
Unknown	3779	18.9

Of all those who were provided with the emergency contraceptive pill (n=30052), most were given an emergency contraceptive pill containing levonorgestrel (57.4%, 17255/30052) rather than an emergency contraception containing ulipristal (42.6%, 12797/30052) (see Table 9).

TABLE 9 MEDICATION SUPPLIED FOR EMERGENCY CONTRACEPTION CONSULTATIONS

Type of emergency contraception pill supplied	Frequency (n)	Percentage (%)
Emergency Contraception consultation ending in supply of emergency contraceptive pill	30052	100
Supply of Levonorgestrel emergency contraceptive pills	17255	57.4
Supply of Ulipristal acetate emergency contraceptive pills	12797	42.6

4.3. Discussion

In this retrospective study, data on the uptake, demographic characteristics, attendance patterns and consultation outcomes of pharmacy-based SRHS from the *Umbrella* service in Birmingham (England) were analysed for the time period August 2015 to August 2018.The pharmacy-based SRHS comprised: emergency contraception, oral contraception, contraceptive injection, STI self-sampling kits and chlamydia treatment.

4.3.1. Summary of the main findings

In total, there were 60573 service requests recorded over a three-year period. Of these, 75 service requests were excluded from the analysis as they did not meet the inclusion criteria. The remaining 60498 service requests were included in the analysis.

There was a higher rate of provision for emergency contraception, condoms and STI self-sampling kits than the rates of provision for oral contraception, contraceptive injection or chlamydia treatment. This was expected as the first three types of services (emergency contraception, condoms and STI self-sampling kits) were available in all *Umbrella* pharmacies (between 127 – 176 'Tier 1' and 'Tier 2' pharmacies between August 2015 and August 2018), whereas the latter three services (oral contraception, contraceptive injection and chlamydia treatment) were restricted to a limited number of pharmacies (between 18-47 'Tier 2' pharmacies between August 2015 and August 2018).

The majority of service requests were made for contraception by females. They were also more likely than males to request pharmacy-based SRHS that were accessible to both females and males. Over the three years, 15 transgender people requested a SRHS at an *Umbrella* pharmacy.

The majority of all service requests were made by people between 16 and 24 years and the median age across all services was found to be 24 years.

There was no ethnicity data available for STI self-sampling kit requests. White/White British and Asian/Asian British accounted for the majority of service requests for the remaining services.

Most service requests were made on Monday and the least common days to present at the pharmacy for a SRHS were Saturday and Sunday. Most service requests at the weekend and on Monday were made by women attending for emergency contraception.

4.3.2. Strengths and weaknesses

Although the evaluation of healthcare utilisation is important to identify barriers to health services, literature on the utilisation of pharmacy-based SRHS is scarce and limited to the delivery of individual SRHS. This was the first study evaluating data collected on a large range of pharmacy-based SRHS over a prolonged period of time; this was timely given that pharmacies are increasingly providing sexual and reproductive health services. The current study made use of recent data on how pharmacy-based SRHS are used in the 'real world'.

The main limitation of this study is that the findings are limited to a single health provider in Birmingham (England), and so may not be generalisable. Further, the analysis relied on routinely collected data which limited the possible analyses. The data analysed in the study was mainly collected by the health provider with the intention to support financial transactions between the funder and pharmacies rather than to conduct research. The use of routine data meant that data was limited in relation to completeness as pharmacy users had the option not to provide some personal details. Consequently, the dataset had missing data (captured in the results as 'unknown'). Variations in the method of data collection also had implications for the analysis. For example, the uptake of STI self-sampling kits could not be described in terms of use by ethnic group. Further, although the integration of patient records is possible and is believed to provide rich data which can be used for research purposes to understand service and medication usage in pharmacies (Horsburgh et al., 2010; Wright & Twigg, 2016), patient records were not integrated and the lack of consistent patient ID number meant that an analysis at patient level could not be conducted. Further, it is possible that transgender people were not identified in the analysis, as they may have been recorded as male or female rather than transgender. Further, since the PhD candidate was unable to obtain an honorary contract with the University Hospitals Birmingham (UHB) and did not have an UHB email account, no dates for service requests were available due to concerns about pharmacy users' anonymity. Not having access to this information limited understanding of whether pharmacy users received several services at one visit, or to analyse service uptake over time.

Despite these shortcomings, this study was the first to explore the utilisation of a large range of community pharmacy-based SRHS. *Umbrella's* novel and integrated pharmacy service encompasses more than 120 pharmacies serving a population over one million people and pharmacy users were from a wide range of ethnic and cultural backgrounds and the study findings can therefore provide useful background information to those planning and delivering pharmacy services elsewhere. Conducting this study also informed the design and delivery of the subsequent qualitative study, as will be outlined in section 4.3.4.

4.3.3. Comparisons to the literature

This study showed that females made up the majority of service requests, even for those services that are accessible to both women and men. That males were less likely than females to access the pharmacy for SRHS has also been found in previous studies on STI testing (C. Anderson & Thornley, 2011; Baraitser et al., 2007; Debattista et al., 2017). This would suggest that males face barriers to pharmacy-based SRHS. However, a study from almost two decades ago showed that men were generally less likely to access the pharmacy for health advice (Banks, 2001), suggesting that males face a barrier to pharmacy access generally. Pharmacy counter staff are predominantly female (Schafheutle et al., 2008) and several studies have shown that males prefer speaking to male staff (Amir et al., 2016; Letshwenyo-Maruatona, 2017).

Hence, the lower proportion of male users could be linked to the high proportion of female counter staff in pharmacies. However, when looking at males usage of other health providers, it seems that males are generally less likely than females to attend for healthcare (Galdas et al., 2005) and with regards to sexual and reproductive health, males have been shown to have a lower uptake of STI testing in settings such as primary care (Kong et al., 2011), sexual health clinics (Banerjee et al., 2018) and commercial venues (Williamson et al., 2007). Males also were found to be less likely to order and return STI self-sampling kits (Banerjee et al., 2018; Götz et al., 2005; Goulet et al., 2010; Macleod et al., 2005; Novak & Karlsson, 2006; Paudyal et al., 2015). Hence, the low uptake of pharmacy-based SRHS in men is most likely not specific to pharmacies.

This study also found that only one person recorded as being transgender requested an STI self-sampling kit through *Umbrella* within the three-year period. A previously published study analysed not only the uptake of *Umbrella's* STI self-sampling kits that were distributed through pharmacies but also those STI self-sampling kits that were collected from *Umbrella's* sexual health clinic and sent to peoples' homes over a six-month period. This study found that 14 people recorded as transgender acquired a STI self-sampling kit within six months (Banerjee et al., 2018). This suggests that transgender people may be less likely to collect an STI self-sampling kit from a pharmacy than to either get it sent to their home or collect it from a clinic. A recent study found that community pharmacists felt that discrimination and lack of provider knowledge were barriers to pharmacies for transgender people, and the low uptake of services by transgender people may support this finding (C. Leach & Layson-Wolf, 2016). However, it is also possible that more transgender people did use pharmacy services but were recorded as female, male or 'prefer not to say' (captured in this study as 'unknown'). Further, it may that transgender people prefer to access SRHS at different settings.

Censuses record data, including ethnicity data, about the population of a country. In the UK, the census takes place every ten years. The first census in the UK was conducted in 1801 and the most recent one was conducted in 2011 (Duke-Williams, 2017). When comparing the ethnicity data in this study with the 2011 Census data from Birmingham, ethnic groups utilising SRHS in pharmacies were represented approximately in proportion to their prevalence in Birmingham's population (Birmingham City Council, 2011) – White/White British (census: 57.9% cf. study population: 43.4%), Asian/Asian British (census: 23.7% cf. study population: 23.1%), Black/Black British (census: 7.2% cf. study population: 15.1%), Mixed/Mixed British (census: 4.4% cf. study population: 2.0%) and other ethnic groups (census: 6.7% cf. study population: 5.8%). In comparison to Birmingham's population, it seems that Black/Black people are overrepresented in the dataset. Black people in developed countries experience worse health across almost all domains, including sexual and reproductive health (Assari, 2018; Fenton, 2001). The finding possibly suggests that pharmacies reach those associated with poor sexual health outcomes.

However, when comparing the available ethnicity data from the pharmacies with 2018 sexual health clinic data from *Umbrella* (Umbrella, 2018), a higher proportion of clinic visits were made

from Black/Black British people compared to pharmacy visits (sexual health clinic: 25% cf. 15.1%). Further, people from Mixed or other ethnic groups were less likely to attend the pharmacy rather than the clinic (sexual health clinic: 14% cf. pharmacies: 7.8%). However, a similar proportion of White/White British people used pharmacies and clinics (sexual health clinic: 43% cf. pharmacy: 43.4%). In comparison to the clinic data, Asian/Asian British people appeared to be more likely to attend pharmacies rather than sexual health clinics (sexual health clinic: 18% cf. pharmacy: 23.1%). This would suggest that people from different ethnic backgrounds prefer different setting for SRHS. However, 10% of the available ethnicity data from the pharmacies is unknown, either because it was not recorded or because people preferred not to state their ethnicity. Further, available data could not capture the number of individual pharmacy users but only the number of service requests. Hence, it was unclear how many different individuals from each ethnic group had accessed the pharmacy for a SRHS in the analysed time period. With regards to the comparison between the study population and census data, it should also be considered that pharmacies are likely to be accessed by their local population, and so ethnicity data might need to be considered at local level rather than city level. However, since we did not have the postcodes of pharmacies by service requests, this could not be analysed. Hence, the findings and comparisons to census and clinic data have to be interpreted with caution.

A recent systematic review suggested that young people are willing to use the pharmacy for SRHS (Gonsalves & Hindin, 2017). In support of this findings, this retrospective quantitative study showed that young people between 16 and 24 years were accounting for the majority of requests for SRHS. When comparing the findings from this retrospective quantitative study with people testing for STIs at a sexual health clinic in Birmingham, a higher proportion of pharmacy attendees were between 16-and 24-years old (3365/5530 [62.9%] cf. 9654/19193 [50%]) (Banerjee et al., 2018). Young people are particularly vulnerable to worse sexual health outcomes (Slater & Robinson, 2014) and these findings suggest that pharmacies may be more effective than sexual health clinics in reaching young people who are in high need for SRHS.

Emergency contraception, STI self-sampling kits and condoms were the most requested services. The analysis of attendance patterns by gender revealed that all those three services were most frequently requested on Mondays by females. It is likely that women requesting emergency contraception were also offered STI self-sampling kits (as they were at risk of contracting a STI) and condoms (for future use) by pharmacy staff when they attended. This would suggest that the concept of integrated services, where several services are provided in one visit, is working. However, since requests of several services in one attendance were recorded under separate service requests and the date of service request was not available, this cannot be verified.

That males appear to obtain condoms before the weekend and emergency contraception is most requested by females on Mondays is possibly because sexual intercourse is more likely to occur at the weekend (Tan, 2020).

This study also showed that the number of requests for emergency contraception was highest on Mondays and lowest on Sundays. This is in line with several previous studies on pharmacy-based provision of emergency contraception (D. Greene et al., 2006; Killick & Irving, 2004; Mantzourani et al., 2019). This may indicate that there are barriers to Sunday access to the pharmacy for example because pharmacies are closed, have variable hours or do not have trained staff on Sundays. This assumption is supported by data provided by *Umbrella* on the current opening times of their pharmacies: In total, 76.7% (122/159) of their pharmacies collaborating with *Umbrella* in Birmingham are closed on Sunday (as of 2020). However, these opening times may have differed in the past and retrospective data on opening times is not available. To prevent unwanted pregnancy, emergency contraception has to be taken within a limited time period and therefore, timely access to emergency contraception is of high importance.

In line with a previously published study, this study showed that more than 97% of emergency contraception consultations ended with the supply of emergency contraception pills (Mantzourani et al., 2019) and emergency contraception pills containing levonorgestrel were most commonly provided to service users. The reasons for this were not captured. However, it may be that ulipristal was less commonly provided because it is more expensive than levonorgestrel (McKeage & Croxtall, 2011).

Although the copper coil can be used as emergency contraception while also providing highly effective contraception, less than 1% of people attending for emergency contraception were provided with a copper coil referral according to this study. This might be because of low interest in the copper coil as emergency contraception (Turok et al., 2011), maybe due to concerns about the long-acting nature and safety of intrauterine contraception (S. Walker et al., 2016). However, it may also be possible that there was a lack of clinical appointments available for the copper coil. This could not be captured in the dataset.

It was shown that condom instructions were rarely provided or accepted. Since condom failure is a common problem (D. Greene et al., 2006), condom instructions may positively contribute to safer sex. A recent study from the US showed that discussing the usage of condoms made people feel embarrassed (Wilson, 2018); it is possible that people declined the condom instructions for these reasons.

In our study, the antibiotic doxycycline was used more commonly to treat chlamydia infections than the antibiotic azithromycin. This stands in contrast to a study from England and Wales, which was conducted between 2006 and 2008 and where the majority of people (93.2%) were treated with azithromycin rather than doxycycline (C. Anderson & Thornley, 2011).

However, between 2010 and 2015 the recommendation for first line treatment for chlamydia infections changed from azithromycin to doxycycline (Lanjouw et al., 2010; Nwokolo et al., 2016). This may explain the difference in proportion of supply of doxycycline and azithromycin.

4.3.4. Contribution of the retrospective quantitative study

This was the first study to analyse the utilisation of a large range of pharmacy-based sexual and reproductive health services. The quantitative study showed the relevance of pharmacy-based sexual and reproductive health services: More than 60000 service requests were recorded within a three-year period, showing that there is a need and demand for pharmacy-based sexual and reproductive health services.

Further, the quantitative study provides important background information for the qualitative study, which is described in chapter 7 and 8. Prior to the conduct of this study it was largely unknown who the users of pharmacy-based SRHS were in terms of age, gender and ethnicity. This information can inform and provide context to the sampling for the qualitative study. It allows understanding of whether the study participants in the interview study are likely to represent the users of pharmacy-based sexual and reproductive health services based on specific demographic criteria.

Moreover, findings from the retrospective quantitative study can be used for comparison against the findings from the systematic review (presented in chapter 5 and chapter 6) and the interview study (presented in chapter 7 and chapter 8). It can be explored whether the qualitative findings can explain or support the findings from the other studies and vice versa. The integration of study findings using an adapted version of the Pillar Integration Process is addressed in chapter 9.

4.4. Chapter summary

In this chapter, the results of the retrospective quantitative study were presented and discussed. In total, 60498 SRHS requests, made between August 2015 and August 2018 at *Umbrella* pharmacies, were included in the analysis. The uptake of sexual and reproductive health services (SRHS) by service type was presented. Next, an overview of service requests by demographic characteristics (age, gender, ethnicity) and attendance patterns by the day of the week was provided. Further, the distribution of age, ethnicity and day of the week were analysed by gender. Afterwards, the outcomes following consultations for condoms, chlamydia treatment and emergency contraception were presented. The discussion started with a summary of the main findings and by outlining the strengths and weaknesses of the retrospective quantitative study. The findings were then discussed in relation to the existing literature. The chapter closed by explaining how the retrospective study contributes, particularly in context of this PhD thesis.

In the next chapter, the systematic review methods are described.

5. Systematic Review Methods

5.1. Chapter overview

This chapter reports on the conduct of a systematic review exploring what is known about pharmacy users' and pharmacy staff experiences of pharmacy-based sexual and reproductive

health services. It begins by presenting the aim and objectives of the systematic review. Afterwards, the research design is outlined. Next, the inclusion criteria are explained. Subsequently, the search methods and search strategy are described. Then, the study selection and data extraction methods are presented. Following this, the tool used to assess the quality of included studies is introduced. The chapter closes by presenting the method chosen for data synthesis.

5.2. Aim & Objectives

5.2.1. Aim

- To summarise what is known about pharmacy users' and pharmacy staff attitudes and experiences of pharmacy-based sexual and reproductive health services using a systematic review

5.2.2. Objective

- To inform the qualitative interview study for this PhD project by exploring what is known about pharmacy users' and staff experiences of pharmacy-based sexual and reproductive health services using a systematic review

5.3. Research Design

Systematic reviews seek to draw together all existing evidence on a certain topic and are methodologically more robust than other types of review (Grant & Booth, 2009). However, their study design alone does not guarantee high quality (Garattini et al., 2016). The value of a systematic review depends on whether it was conducted in a rigorous way and on how well authors report their methods and findings (Page & Moher, 2017). This systematic review was conducted according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) reporting framework (Moher et al., 2009). The *PRISMA* statement is a reporting guideline which was developed to allow better reporting and critical appraisal of reviews, and to increase the transparency and integrity of reporting systematic reviews (Hutton et al., 2016; Page & Moher, 2017). It has been used by researchers around the world since its publication in 2009 (Hutton et al., 2016).

There are many benefits of registering systematic reviews before they are conducted (Page et al., 2018). For example, unintended duplication of systematic reviews can be avoided if researchers can access information on which systematic reviews are planned to be conducted (Gough et al., 2012; Page et al., 2018).

Further, stating the review methods in a review protocol without prior knowledge of results helps to reduce risk of bias (Kirkham et al., 2010). In 2011, the world's first international prospective register of systematic reviews (PROSPERO) was launched (Page et al., 2018). It is web-based and freely accessible to the public. To facilitate optimal transparency, the protocol for this systematic

review was therefore registered with PROSPERO in August 2018 under the registration number CRD4201810680 (see Appendix 2). The systematic review was published in the journal *Sexually Transmitted Infections* on the 17 July 2019. A copy of this paper is provided in Appendix 3.

5.4. Criteria for considering studies for the review

An overview of the inclusion and exclusion criteria for the review are provided in Table 10.

5.4.1. Types of studies

Traditionally, systematic reviews included only quantitative evidence (Hong et al., 2017). However, in the past 20 years, mixed methods have been increasingly been recognised as an alternative to quantitative or qualitative approaches (Teddlie & Tashakkori, 2009) . Since then, reviews of both qualitative and quantitative evidence are increasing in popularity (Hong et al., 2017; Sandelowski et al., 2006). Including different types of study designs and synthesising their results has the potential to provide greater strength and a richer understanding of phenomena compared to systematic reviews including only qualitative, quantitative or mixed methods studies (Harden & Thomas, 2005; Hong et al., 2017; Pearson et al., 2015). We therefore included quantitative, (randomised controlled trials, non-randomised controlled trials, cross-sectional studies, cohort studies), qualitative (interviews, focus groups, observational studies) and mixed methods studies in our systematic review.

Consideration was given on whether to include studies in languages other than English. Including studies covering all languages may be more time consuming and potentially costly if translation costs occur (Jüni et al., 2002). However, excluding studies written in languages other than English introduces language bias and might lead to erroneous conclusion (Morrison et al., 2012). Therefore, no language restrictions were made in this systematic review.

Pharmacy staff role and practices are changing fast due to policy changes and healthcare system reforms (S. Anderson, 2007; Mossialos et al., 2015). For this reason, the previous ten year period is often chosen as timeframe for systematic reviews (Di Sandro et al., 2018; Lu et al., 2019; Manzoni et al., 2008). It was also used as time frame in a previous systematic review in the field of pharmacy (Eades CE et al., 2011). It was therefore decided to restrict the time frame for the systematic review to the past ten years (as of 2018).

5.4.2. Types of participants

A recent study comparing inquiries from mystery shoppers and real clients showed that there were systematic differences between them (Stokoe et al., 2020). For example, mystery shoppers did not produce social actions (e.g. service requests) in the same way as real clients (Stokoe et al., 2020). When applied to pharmacy-based sexual and reproductive health services, it may therefore be that 'real' service users may experience services differently to mystery shoppers. Studies including mystery shoppers (studies utilising unannounced standardised patients to evaluate services) were therefore excluded from this review. Instead only studies exploring the experience of 'real' service users were included.

Service user experience is strongly linked to staff experiences (Goodrich, 2018). It was therefore considered to be important to capture not only pharmacy users' experiences but also providers' experiences of pharmacy-based sexual and reproductive health services for this systematic review. No restrictions with regards to age, gender or ethnicity were made.

5.4.3. Setting

Community pharmacies located in countries listed as Organisation for Economic Co-operation and Development (OECD) member countries (as of 2018) were included in this review. OECD countries as a whole largely differ from non-OECD countries (W. Greene, 2004; Zimmermann et al., 2018). For example, the product availability at retail pharmacies in OECD countries is much higher than in non-OECD countries (Ballou-Aares et al., 2008).

Whilst OECD member countries have different models of health care delivery and medical practices vary internationally (Corallo et al., 2014), they do have features in common. For example, most OECD countries have implemented universal health coverage for their population (Paris et al., 2016). Further, OECD countries face similar challenges such as dealing with the rising demand for quality health care surpassing the public health resources (Ozcan & Khushalani, 2017) and have therefore expanded their focus on community-based care (Ozcan & Khushalani, 2017). As of 2017, the average pharmacist to population ratio in OECD member countries is 8.2 pharmacists per 10,000 population (Alameddine et al., 2019). Evidence from non-OECD member countries therefore may not be effective in informing the field work in an OECD country such as the UK as they differ significantly. Studies from non-OECD member countries were therefore excluded from this systematic review. Instead, only research on pharmacy services from OECD member countries were included as these countries are more alike, allowing study findings to be more likely to inform field work in the UK.

In 1999, *Soma.com* became the first online pharmacy (Mackey & Nayyar, 2016). Since then, online pharmacies have rapidly expanded with about 35,000 online pharmacies worldwide estimated to exist (as of 2016) (The Center for Safe Internet Pharmacies, 2016). Online service delivery models differs significantly to that in physical pharmacy stores (Orizio et al., 2011).

Instead of selling drugs including prescription-only drugs in a physical store, online pharmacies sell them through the internet and deliver pharmaceutical preparations through mail. Consequently, pharmacy users and staff therefore may have different experiences using an online pharmacy and physical pharmacy for sexual and reproductive health services. Studies looking at online pharmacies were therefore excluded from this study, except if they were used as a comparator to a physical community pharmacy.

5.4.4. Types of Interventions

As outlined in section 1.5.2 , most sexual and reproductive health services in England are provided by local authorities (Hind, 2013), who are free to decide where to locate the services. Whilst most local authorities provide emergency contraception and chlamydia screening through pharmacies, only few local authorities provide additional sexual and reproductive health services through pharmacies (Public Health England, 2017). Local authorities in Birmingham (England) were identified to provide a comprehensive range of sexual and reproductive health services. The services included in this review were therefore defined by the range of pharmacy-based sexual and reproductive health services that are provided by Birmingham's local authority. It was important to define included services based on the range of services provided in England, as this is where the field work informed by this review took place. These services included: condoms, emergency contraception, pharmacy-based testing for sexually transmitted infections (such as chlamydia, gonorrhoea, syphilis, and HIV, hepatitis B), chlamydia treatment, contraceptive injection, and oral contraception. Further, any form of partner notification and hepatitis B vaccination were included for the systematic review. These two services have not been implemented by *Umbrella* pharmacies but were planned to be delivered in the future. Studies including at least one of those services were included in this review.

5.4.5. Comparator

Since the research also aimed to explore how users and staff experience pharmacy-based sexual health services compared to users and staff of other sexual health providers, studies comparing pharmacy services with other services (including Primary Care, Secondary Care, Sexual Health Clinics) were included in this systematic review. However, it was not necessary for studies to have a comparator to be included in the review.

5.4.6. Types of outcomes

For all reviews, it is important to define outcomes that are meaningful to patients and other key stakeholders (Pollock & Berge, 2018). The Cochrane Effective Practice and Organisation of Care (EPOC) group undertakes reviews of interventions aimed to improve health care delivery (Grimshaw et al., 2006). As the current review looked at health service delivery, the outcomes of interest for this review were based on the outcomes listed in the framework of the Cochrane EPOC group (Cochrane Institute, 2017).

The outcomes for this review were as follows:

- Workload (pharmacy staff)
- Impact (pharmacy staff; pharmacy users)
- Advice (pharmacy staff; pharmacy users)
- Enablers and barriers to service delivery (pharmacy staff; pharmacy users)
- Quality of care (pharmacy staff; pharmacy users)
- Satisfaction (pharmacy staff; pharmacy users)
- Experience (pharmacy staff; pharmacy users)
- Attitude (pharmacy staff; pharmacy users)

Attitudes were only considered if they were based on actual experiences. The reason for this was that we aimed to explore users' and staff perspectives on implemented rather than planned pharmacy services.

TABLE 10 SYSTEMATIC REVIEW: INCLUSION AND EXCLUSION CRITERIA

Systematic Review: Inclusion and Exclusion Criteria	
Types of Studies	
Inclusion	• Qualitative studies (interviews, focus groups, ethnographies) • Quantitative studies (randomised controlled trials, non-randomised controlled trials, cross-sectional studies, cohort studies) • Mixed methods studies • Grey literature and dissertation theses
Exclusion	• Service Evaluations • Conference Abstracts • Conference Proceedings • Poster Presentations • Literature Reviews and Systematic Reviews
Types of participants	
Inclusion	• Pharmacy users of sexual health services • Pharmacy staff (pharmacists, pharmacy technicians, pharmacy healthcare assistants, locum pharmacists) providing sexual health services in pharmacies
Exclusion	• Mystery shopper studies
Setting	
Inclusion	• Pharmacies (community pharmacies; supermarket pharmacies)
Exclusion	• Internet Pharmacies (or Online Pharmacies) and Hospital pharmacies • Pharmacies which are not located in countries listed as Organisation for Economic Co-operation and Development (OECD) member countries

Types of interventions	
Inclusion	• Condoms • Emergency hormonal contraception • STI self-sampling or testing kits for chlamydia, gonorrhoea, syphilis, and HIV • Chlamydia treatment • Oral contraceptive pill • Contraceptive injection • Hepatitis B vaccine • Any form of partner notification
Exclusion	• Female condoms • Treatment for gonorrhoea, syphilis, HIV • Pre-exposure prophylaxis (or PrEP)
Comparator	
Inclusion	• Any sexual health service provider other than those pharmacy-based (including Primary Care, Secondary Care, Sexual Health Clinics) • No comparator group
Outcomes	
Inclusion	• Workload (pharmacy staff) • Impact (pharmacy staff; pharmacy users') • Advice (pharmacy staff; pharmacy users') • Enablers and barriers to service delivery (pharmacy staff; pharmacy users') • Quality of care (pharmacy staff; pharmacy users') • Satisfaction (pharmacy staff; pharmacy users') • Experience (pharmacy staff; pharmacy users') • Attitude (pharmacy staff; pharmacy users')
Exclusion	• Attitude - if prospective (pharmacy staff; pharmacy users')

5.5. Search Methods for identification of studies

This section outlines the search methods and explains the search strategy.

5.5.1. Electronic database searches

Consideration was made as to the electronic databases searched for this review. When searching for relevant literature, the search of multiple databases is recommended (Bramer et al., 2017). Previous reviews on extended pharmacy services (Ali M.K. Hindi et al., 2019), pharmacy-based sexual and reproductive health services (Gonsalves & Hindin, 2017), STI screening (Paudyal et al., 2015), and contraception (Roberts & Noyes, 2009) were used to inform the choice of databases searched for this review. Additionally, evidence on literature searches were used to decide which databases to search. A recent study on literature searches showed that the combination of the databases Embase, Medline, Web of Science and PsycINFO was effective in identifying literature (Bramer et al., 2017). According to this study, Embase produced the most unique references but PsycINFO also added unique references to some reviews (Bramer et al., 2017). Popline used to be one of the databases with greatest depth and breadth of evidence on family planning (Compton & Stenger, 1986) until it was retired on the first September of 2019.

Considering the databases searched in previous reviews and research on literature studies, the following seven databases were chosen to identify relevant literature:

- Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library)
- Embase (Classic + Embase)
- Medline (OVID)
- Popline
- PsycINFO
- Scopus
- Web of Science

All electronic databases were searched on the 17th September 2018.

The previously published systematic review on pharmacy-based sexual health services (Gonsalves & Hindin, 2017; Gudka, Afuwape, et al., 2013) was used to inform the key words searched for this review. Further, the selection of keywords chosen for this systematic review was discussed with a specialist librarian (S.J.) and both academic supervisors (H.A. and J.R) who all have extensive experience in designing search strategies in health research. The search strategy was refined over time.

Keywords from the research question such as "pharmacy" or "pharmacies" were mapped with several search terms related to contraception services and STI services. The search strategy was adapted for each database. A combination of medical subject headings (MeSH) and multi-purpose set of fields (.mp), which searches in titles, abstracts and keywords, was utilised. A multi-purpose search was suggested by the librarian (S.J.) since it is slightly narrower than searching all fields ('.af'). No language limits were applied and no search terms relating to specific countries were used to avoid limiting the search sensitivity. The detailed electronic search strategy for all electronic databases can be found in Appendix 4.

According to a survey from 2013, the reference software EndNote (by Clarivate Analytics) was used by more than half of systematic reviewers (Lorenzetti & Ghali, 2013). For this review, EndNote X8 was also utilised. All references were imported into EndNote X8 and were de-duplicated by the PhD candidate (J.G.) using the 'EndNote' function 'Find Duplicates' and by manual search.

5.6. Data collection and analysis

5.6.1. Study selection

The PhD candidate (J.G.) screened all titles and abstracts identified against the inclusion criteria. As double screening of titles and abstracts is important as substantially more studies are missed when studies are only screened once (Waffenschmidt et al., 2019), two researchers (I.H and I.S) additionally acted as second screeners. Each of the two second reviewers (I.H. and I.S) screened 50% of all titles and abstracts independently. Any discrepancies on whether to include a reference for full text screening were resolved through discussion with a further research (H.A. or J.R).

After the screening of the titles and abstracts, the full texts of potentially eligible studies were retrieved. J.G. screened all full texts and, as outlined before, I.H. and I.S. acted as second

screeners. This time, a reason to exclude a paper from the review was recorded. Discrepancies on whether to exclude a full text paper were resolved through discussion with the academic supervisors (H.A. or J.R.).

The reference list of all included articles was checked for further relevant articles. This process is often undertaken by researchers conducting a systematic review (Horsley et al., 2011) as it allows searching in a more comprehensive way than searching electronic databases alone (Badampudi et al., 2015) and can lead to the further identification of relevant evidence (Kugley et al., 2017).

All studies could be accessed, and the last study was accessed on the 20th November 2018.

5.6.2. Data extraction

Data extraction is an important step in conducting systematic reviews as it builds the basis for the results. Based on the guidance provided by Boland et al. (2017) and templates provided by the academic supervisors, a data extraction sheet was developed by J.G. for this systematic review. It was piloted on a few randomly selected studies by the PhD candidate (J.G) and two researchers (I.H and I.S) to ensure the completeness of the sheet. After discussion, no changes were made. The data extraction sheet for this study can be found in Table 11.

The data for all studies were extracted by the PhD candidate (J.G.). Since a previous study showed that prevalence of data extraction errors in systematic reviews are high, two further researchers (I.H. and I.S.) each extracted data for half of the studies to reduce the likeliness for errors to occur (Gotzsche et al., 2007). The three researchers (J.G, I.H. and I.S.) compared their data extraction and checked the references again in cases where authors had different data extracted.

TABLE 11 DATA EXTRACTION SHEET

Data Extraction Sheet for the Systematic Review - Version 1.0 (7 November 2018)	
Study Title	*What is the title of the study?*
First Author	*What is the name of the first author?*
Date published	*When was the study published? (Month/Year)*
Setting	*Where and when did the study take place (Location/ Country)*
Study Design	*What study design was used? (Qualitative study, quantitative study, mixed methods study)*
Study Methods	*Which methods were used to collect data? (e.g. interviews, focus groups, etc.)*
Research Question(s) or Research Objective(s)	*What is/are the research question(s) or research objective(s)?*
Number of participating pharmacies	*How many pharmacies participated in the study?*
Type of participating pharmacies	*What type of pharmacy participated in the study? (e.g. individual pharmacy; chain pharmacy)*
Population	*Who are the study participants (e.g. pharmacists, pharmacy users etc.); What is participants age, gender, ethnicity and religion (where reported)*
Comparator	*Was a comparator used in the study? If yes, which one? (e.g. GP)*
Sexual and reproductive health / Intervention	*Which sexual and reproductive health services did the study explore? (e.g. emergency contraception)*
Outcomes	*What were the outcomes used in the study? (e.g. experience, attitude)*
Results	*What did the study find?*
Sponsorship/ Funding	*Who funded or sponsored this study?*

5.6.3. Assessment of quality in included studies

The most difficult source of bias in systematic reviews is to control for included studies of low methodological quality (Jarde et al., 2012). If included studies are flawed, the results of the systematic review cannot be trusted. Therefore, it is important to assess the quality of included studies (Jarde et al., 2012).

When conducting a systematic review including qualitative and quantitative evidence, assessing the quality of studies is challenging due to the heterogeneity of studies (Hong, Gonzalez-Reyes, et al., 2018). Although some research suggests that studies that are reported poorly should be excluded from reviews (Carroll et al., 2012), it was decided to not exclude papers based on their reporting as they may still have been conducted adequately and provide valid and important findings. Instead, the quality assessment was used to offer context for the synthesised findings. While there are more than five hundred tools to critically appraise studies, most of them can only be applied for one specific research design (Pluye et al., 2019).

For this review, the Mixed Methods Appraisal Tool (MMAT) – Version 2018 was used for the quality assessment of included studies (Hong, Pluye, et al., 2018). It was chosen because it is a quality assessment tool for mixed methods reviews, allowing to assess the quality of evidence of all study designs, including mixed methods research designs (Crowe & Sheppard, 2011; Simera et al., 2010).

It has been found to be easy to use and comprehensive (Hong et al., 2018). It is also an increasingly popular method used to assess the quality of studies. Since its publication in 2009, it has been cited in more than one hundred systematic reviews (Hong, Gonzalez-Reyes, et al., 2018). MMAT, which was first published in 2009 (Pluye et al., 2019), consists of five sets of criteria for: qualitative, randomised, non-randomised, quantitative descriptive and mixed methods studies.

The PhD candidate (J.G.) assessed the quality of all included studies. Additionally, I.H. and I.S. each assessed the quality of 50% of the papers. Disagreements were resolved by consensus or by the PhD supervisors (H.A. and J.R.).

One of the MMAT criteria for quantitative descriptive studies asks whether the risk of nonresponse bias is low. Non-response bias may inhibit the generalisation of findings (Rupp et al., 2002). The Journal of the American Medical Association editorial policy states that response rates in surveys should generally be at least sixty percent in order to limit the impact of nonresponse bias on the validity of findings (Davern, 2013). Therefore, the risk of nonresponse bias was reported as low for this systematic review if the response rate was greater than or equal to sixty percent.

The outcome of quality assessments can be summarised in an overall quality score (Lundh & Gøtzsche, 2008). A recent systematic review on quality assessment tools of non-experimental studies found that the majority of quality assessment tools have a summary score (Jarde et al., 2012). As no guide for categorising studies into high, medium or low quality exists for MMAT, a guide for interpretation was developed by the PhD candidate. As it is important to explain how individual quality criteria are summarised (Viswanathan et al., 2012), studies included in the review were grouped into high, medium, or low quality. For qualitative and quantitative papers, for which five MMAT criteria exist, they were grouped into high, medium or low quality if they met 4-5, 3, or 1-2 criteria respectively. For mixed methods studies, for which there are 15 (in one case 20) criteria, papers were divided into high, medium or low quality if they fulfilled 11-15 (12-20), 8-10 (9-12), or 1-7 (1-8) criteria.

5.6.4. Data synthesis

There are many ways to synthesise qualitative and quantitative evidence in systematic reviews, some of which are interpretive and some of which are integrative (Dixon-Woods et al., 2005). Interpretive synthesis is concerned with the development of concepts or theories, whereas integrative syntheses focus on summarising data (Dixon-Woods et al., 2005). Examples for interpretive ways to synthesise qualitative and quantitative data include realist synthesis, grounded theory, and thematic analysis.

Realist synthesis is a theory-driven approach to synthesise evidence which can deal with evidence in many forms, including qualitative and quantitative data (Dixon-Woods et al., 2005).

However, realist syntheses are only used in realist reviews. Grounded theory is an approach which is traditionally used for qualitative data analysis but could potentially deal with quantitative data by converting quantitative data into qualitative form (Dixon-Woods et al., 2005).

Thematic analysis is an approach where analytical themes are identified in the data and conceptual frameworks can be developed (Hong et al., 2017). It is usually used with qualitative data but could also be used with quantitative data (Popay et al., 2006a).

However, since the objective of the current systematic review was to "to understand what is known about pharmacy users' and pharmacy staff experiences of pharmacy-based sexual and reproductive health services", choosing an interpretive approach would have gone beyond summarising the data. Instead, an integrative approach was chosen to summarise the data.

Narrative synthesis was identified to be the second most commonly used method to synthesise qualitative and quantitative evidence in systematic reviews after thematic analysis (Hong et al., 2017). Evidence is integrated by a coherent textual narrative where diverse forms of findings are discussed side by side (Campbell et al., 2018; Dixon-Woods et al., 2005). The UK's Economic and Social Research Council funded guidance on how to conduct a narrative synthesis to increase the reproducibility and transparency of narrative synthesis. The guidance was published in 2006 (Popay et al., 2006b). Elements of the guidance were used to guide the synthesis for this systematic review. Characteristics of included studies were summarised, and key findings of all studies were described as part of the data extraction process. Patterns across included studies were identified and described alongside the population type (Pharmacy Users/ Pharmacy Staff). Findings were presented in text and tables.

5.7. Chapter summary

The systematic review follows the PRISMA guidance. The aim of the review was to understand what is known about pharmacy users' and pharmacy staff experience of pharmacy-based SRHS. The inclusion criteria were outlined in this chapter. Qualitative, quantitative and mixed methods studies, which focussed on pharmacy-based SRHS and were conducted in OECD countries in the past ten years, were included in this review. Next, the search methods were described. In total, seven databases were searched for this review. Afterwards, the methods to select studies were described. It was also outlined which data was extracted from included studies. The Mixed Methods Appraisal Tool was used to assess the quality of included studies and a narrative synthesis applied to analyse evidence. The results of the review and discussion of the findings are presented in the following chapter (chapter 6).

6. Systematic Review Results and Discussion

6.1. Chapter overview

This chapter begins by presenting the results of the literature search and by describing the studies included in the review. Then, the results of the quality assessment are outlined. Afterwards the findings of the systematic review are described. The results are presented by population type (pharmacy users and pharmacy staff). In the discussion, the key findings are summarised, and the strengths and weaknesses of the systematic review presented. Afterwards, the results are discussed in relation to the current literature. The chapter ends by outlining gaps in the literature on users' and staff experiences of pharmacy-based SRHS that the systematic review identified.

6.2. Results of the literature search

Figure 5 illustrates the number of papers that were identified, screened, excluded and included, based on the PRISMA guidelines (Moher et al., 2009). A total of 8965 studies were identified through the database searches. Following de-duplication, 4778 articles were screened for their titles and abstracts. Out of those 4778 articles, 110 articles were screened for their full text and 20 articles, reporting on 16 different studies, were included in the review. A further three studies were identified through the screening of the reference lists of the included studies. The screening of the reference list of those three studies did not identify further studies. Hence, in total 23 articles reporting on 19 different studies were included in this systematic review.

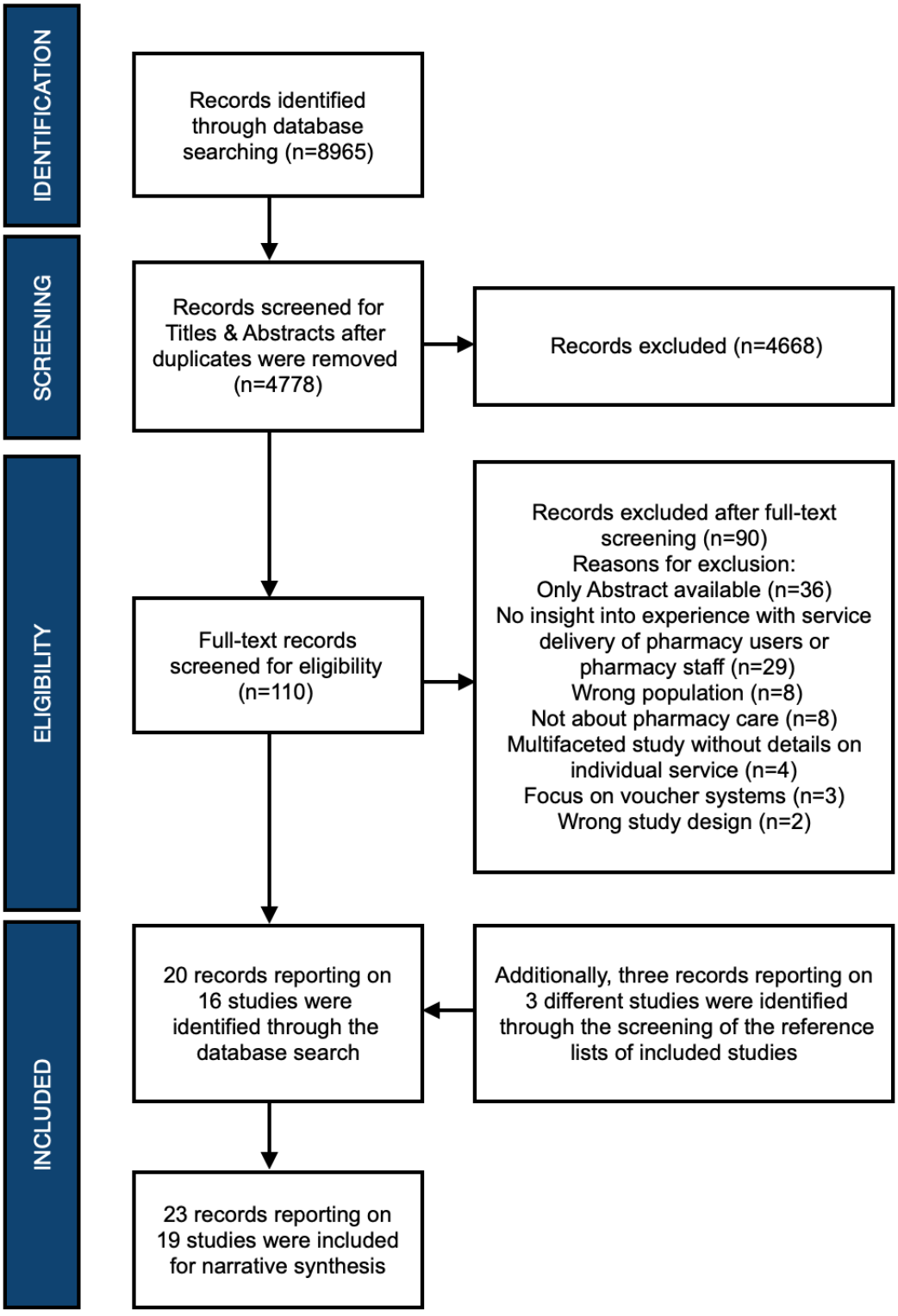

FIGURE 5 PRISMA FLOW DIAGRAM SHOWING SCREENING OF IDENTIFIED STUDIES

6.3. Description of included studies

The 19 studies can be split into three different study designs: quantitative studies (n=7), qualitative studies (n=5) and mixed methods studies (n=7).

Some studies looked only at pharmacy staff perspectives (n=11) or pharmacy users' perspectives (n=4), while others looked at both pharmacy staff and pharmacy users' perspectives (n=4). Only two studies looking at pharmacy staff included pharmacy healthcare assistants as study participants (Deeks et al., 2014; Parker et al., 2015; Ryder et al., 2015). To explore pharmacy staff and pharmacy users' experiences, surveys (n=12), interviews (n=11) and focus groups (n=2) were used as methodologies in the included studies. Two included studies were found to have the same first author (Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013). Most studies only focussed on one type of intervention (n=16). Only three studies looked at two types of interventions (Gudka et al., 2009; Gudka, Marshall, et al., 2013; L. Michie & Cameron, 2020; G. Thomas et al., 2009) and no study explored more than two different interventions. The sexual and reproductive health services included in the selected studies are as follows: emergency contraception, oral contraception, contraceptive injection, chlamydia screening, HIV screening, and condom distribution.

Six out of the eight studies that included pharmacy users only had women as study participants because they looked at services (e.g. emergency contraception, oral contraception or chlamydia screening after emergency contraception) which can only be accessed by females (Black et al., 2008; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013; R. Heller et al., 2017; L. Michie et al., 2016; Ragland, Battle, et al., 2015).

Two qualitative and two quantitative studies compared pharmacy users' experiences with users who had obtained services from other settings including Family Planning Clinics and General Practices.

Most studies originated from Australia (n=7), England (n=4) and the United States (n=4). Two studies were from Canada, one from New Zealand and one from Scotland.

An overview of the characteristics of included studies is presented in Table 12.

6.4. Quality of included studies

The quality of the included studies was variable. In total, ten studies were of high, five of low and four of medium quality (see Table 12).

Qualitative studies were more likely to be of good quality: Four qualitative studies were found to be of high quality and one of medium quality.

The quantitative and mixed methods studies varied more in their quality: Out of the seven quantitative studies, three were of high, two of medium and one of low quality. Three of the mixed methods studies were of high quality, one of medium quality and three of low quality.

Most studies (n=18) had clear research questions and collected data in a way that allowed them to address their research questions (n=16). However, only three studies (Cooper et al., 2008; Ryder et al., 2015; Wong et al., 2017), which all were qualitative, fulfilled all of the MMAT's assessment domains.

All of the quantitative descriptive studies used appropriate measurements and statistical analysis to answer their research questions and all of the mixed methods studies employed a relevant sampling strategy to address the research questions.

As outlined in the systematic review methods chapter, the response rate in surveys should at least be sixty percent for the non-response bias to be considered as low. However, none of the quantitative descriptive studies and only one of the seven mixed methods studies had a response rate higher than sixty percent, giving overall high risk of non-response bias.

Further, most of the mixed methods studies (n=6) failed to adequately bring together results into an overall interpretation or to address divergences and inconsistencies between quantitative and qualitative results (n=4).

For a mixed methods study to be of good quality, both the qualitative and quantitative components need to be of high quality according to the MMAT criteria. However, this was not the case in five out seven mixed methods studies included in the review.

An overview of the criteria met, and the overall quality can be found in Appendix 5.

TABLE 12 CHARACTERISTICS OF INCLUDED STUDIES

First Author (Year)	Overall Study Design	Study Component(s) of interest for the review	Setting	Type of Intervention	Comparator	Relevant Pharmacy Population Type	Overall quality
Black (2008)	Quantitative	Survey	England	Emergency Contraception	Yes (Family Planning Clinic; GP)	Pharmacy Users (n=50)	Low
Chaumont (2017)	Mixed Methods	Interviews and Survey	Canada	Emergency Contraception	No	Pharmacists (Survey: n=198; Interviews: n=17)	High
Cooper (2008)	Qualitative	Interviews	England	Emergency Contraception	No	Pharmacists (n=23)	High
Dabrera (2011)	Qualitative	Interviews	England	Chlamydia screening	No	Pharmacists (n=10)	Medium
Darin (2015)	Quantitative	Survey	United States	HIV screening	No	Pharmacy Users (n=69)	Low
Debattista / Emmerton (2017/ 2011)	Mixed Methods	Interviews	Australia	Chlamydia Screening	No	Pharmacists (not reported)	Low
Deeks / Parker (2014/2013)	Mixed Methods	Interviews, Focus Groups and Survey	Australia	Chlamydia Screening	No	Pharmacy Users (Survey: n=945; Interviews: n=18) and Pharmacy Healthcare Assistants (Survey: 20; Focus group =10)	Medium

Downing (2011)	Mixed Methods	Interviews and Survey	Australia	Emergency Contraception	No	Pharmacists (Survey: n=34; Interviews: not reported), non-pharmacists such as pharmacy healthcare assistants and pharmacy managers (Survey: n=111; Interview: not reported)	Low
Gudka (2013/2009)	Mixed Methods	Survey and Focus Groups	Australia	Chlamydia Screening after Emergency Contraception	No	Pharmacy Users (Survey: n=91; Focus Group: n=5) and Pharmacists (Focus Group: n=6)	High
Gudka (2014)	Quantitative	Survey	Australia	Emergency Contraception	No	Pharmacy Users (n=113)	Medium
Heller (2017)	Mixed Methods	Survey and Interviews	Australia	Contraceptive Injection	No	Pharmacy Users (Survey: n=50) and Pharmacists (Interviews: not reported)	Low
Hussainy (2011)	Quantitative	Survey	Australia	Emergency Contraception	No	Pharmacists (n=427)	High
Michie (2016)	Qualitative	Interviews	Scotland	Oral Contraception after Emergency Contraception	Yes (Two types of pharmacy care; Family Planning Clinic)	Pharmacy Users (n=12) and Pharmacists (n=10)	High
Ragland/ Ragland (2015)	Quantitative	Survey	United States	Emergency Contraception	Yes (Women's Clinic)	Pharmacy Users (n=87)	Medium

Rodriguez (2018)	Quantitative	Survey	United States	Hormonal Contraception		Pharmacists (n=121)	High
Ryder (2015)	Qualitative	Interviews	United States	Condoms	No	Pharmacists (n=5) and Pharmacy Healthcare Assistants (n=4)	High
Thomas (2009)	Mixed Methods	Interviews	New Zealand	Chlamydia Screening after Emergency Contraception	Yes (Schools; Health & Youth Centres)	Pharmacists (n=12)	High
Whelan (2013)	Quantitative	Survey	England	Emergency Contraception	No	Pharmacists (n=422)	High
Wong (2017)	Qualitative	Interviews	Canada	Copper IUD consultation as part of Emergency Contraception counselling	No	Pharmacists (n=20)	High

6.5. Pharmacy users: Experiences and attitudes

The main findings on pharmacy users' experiences and attitudes are summarised in Table 13. Three key areas relating to pharmacy users' experiences and attitudes were identified: privacy; convenience; and pharmacy staff as sexual and reproductive health providers.

6.5.1. Privacy

Privacy was a topic that was discussed in most studies (five out of eight) looking at pharmacy users' perspectives (Black et al., 2008; Darin et al., 2015; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013; Parker et al., 2015).

In most studies, pharmacy users were directly asked about their experience of privacy at the pharmacy (Black et al., 2008; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013; Parker et al., 2015), whereas in one study the topic was brought up by pharmacy users without being prompted (Darin et al., 2015).

The topic 'privacy' was not identified in studies on condoms or ongoing contraception but only in studies on emergency contraception and STI testing (Black et al., 2008; Darin et al., 2015; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013; Parker et al., 2015).

Pharmacy users' experience of privacy conflicted within and between studies: While some pharmacy users stated that privacy was something that they liked about the pharmacy (Darin et al., 2015; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013) and that privacy at the pharmacy was not a concern for them, other pharmacy users were concerned about their privacy (Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013), particularly at the pharmacy counter (Darin et al., 2015). Some pharmacy users even felt that lack of privacy was a barrier to service access. Fear of being overheard and being surrounded by other pharmacy users were reasons why pharmacy users did not want to discuss sexual and reproductive health over the counter and why privacy was important to pharmacy users (Darin et al., 2015; Parker et al., 2015). When compared to clinic users (98.9%; 82/83), pharmacy users were found to be significantly less likely ($p \leq 0.001$) to agree that adequate privacy had been provided to them (44%, 22/50) (Black et al., 2008).

6.5.2. Convenience

Convenience was one of the most highly valued features of the pharmacy amongst pharmacy users. In particular, physical accessibility of pharmacies was convenient for pharmacy users. They found it easy to a get to a pharmacy and liked that they did not have to travel a long distance to obtain a sexual and reproductive health service (Black et al., 2008; Darin et al., 2015; Gudka et al., 2014). In comparison, users found it easier to obtain a sexual and reproductive health service from a pharmacy than from a clinic (Black et al., 2008). Pharmacy users were also positive about the fast delivery of sexual and reproductive health services at the pharmacy (Darin et al., 2015). The walk-in nature of pharmacies was another feature that pharmacy users appreciated.

Some pharmacy users described that they had difficulties in the past to schedule an appointment for contraception in other settings and for some women this had put them off accessing contraception (Black et al., 2008; Darin et al., 2015; Deeks et al., 2014; Gudka et al., 2014; R. Heller et al., 2017; L. Michie et al., 2016; Parker et al., 2015). Pharmacy users therefore appreciated the fact that there was no need to make a plan or book an appointment before visiting the pharmacy (Deeks et al., 2014; Gudka et al., 2009; Gudka, Marshall, et al., 2013; L. Michie et al., 2016; Parker et al., 2015). In addition, pharmacy users liked that both sexual and reproductive health and other health issues could be dealt with in one visit. Pharmacies also offered the opportunity to get both the consultation and the medication in one attendance whereas General Practitioners typically can only provide the consultation but not the medication.

However, there were also a few aspects that reduced the convenience of pharmacy access for sexual and reproductive health services. For example, some pharmacy users found that there were no trained pharmacy staff available to provide a sexual and reproductive health service (R. Heller et al., 2017). This meant that they had to return to the pharmacy at another time.

Moreover, users who had accessed the pharmacy for STI testing found it inconvenient that they had to return the STI self-sampling kits to designated places and then wait for the test results. Having to call the hospital during working hours to receive the test results also did not suit some pharmacy users (Gudka et al., 2009; Gudka, Afuwape, et al., 2013).

6.5.3. Pharmacy staff as sexual and reproductive health providers

Pharmacy users commented on three different aspects of the pharmacy consultation: pharmacy staff communication and interpersonal skills; the information and advice provided to them; and on pharmacy staff competency in delivering the services.

Pharmacy staff communication and interpersonal skills

Pharmacy users generally had a positive consultation experience with pharmacy staff. Pharmacy staff were often described as nice, polite, friendly, kind, supportive and understanding. With exception of some young people, pharmacy users were largely comfortable discussing sexual and reproductive health with pharmacy staff (Darin et al., 2015; Deeks et al., 2014; Gudka et al., 2009, 2014; Gudka, Marshall, et al., 2013; R. Heller et al., 2017; L. Michie et al., 2016; Parker et al., 2015; Ragland, Battle, et al., 2015; Ragland, Payakachat, et al., 2015) and found that they were professional during the consultation. They also felt that information was communicated clearly by pharmacy staff (Gudka et al., 2009; Gudka, Marshall, et al., 2013).

Pharmacy staff information and advice

Overall, pharmacy users felt that appropriate advice was provided in the consultation and were highly satisfied with the consultation. However, consultations delivered by pharmacy staff appeared to be less comprehensive than consultations delivered by clinicians: For example, pharmacy users were less likely (82%; 41/50) than users of clinical services (95%; 78/83) to agree that adequate advice had been provided to them during the consultation (p=0.15) (Black et al., 2008). Further, pharmacy users who attended for emergency contraception were less likely (28%; 14/50) than users of clinical services (90.4%; 75/83) to receive advice on future contraception as part of the consultation ($p \leq 0.001$) (Black et al., 2008).

Pharmacy users were also found to be less likely (n=87; mean ± SD: 3.6±0.6) than users of clinical services (n=116, mean ± SD:3.8±0.4) to agree that the information helped them to understand future use of emergency contraception better (p=0.034) (Ragland, Battle, et al., 2015; Ragland, Payakachat, et al., 2015), suggesting that this information was not provided or clearly communicated by pharmacy staff.

Pharmacy staff competency in delivering the services

Pharmacy users felt comfortable with pharmacists conducting the HIV rapid testing and stated that staff were able to obtain an adequate blood sample at the first attempt (Darin et al., 2015). There was also no significant difference between how comfortable users who had been to the pharmacy and users who had been to a GP felt receiving a HIV fingerstick test (Darin et al., 2015). While some pharmacy users who attended for the contraceptive injection had positive experiences, others found that staff appeared to be inexperienced with the method of delivery and needed several attempts to give the injection (R. Heller et al., 2017).

6.6. Pharmacy staff: Experiences and attitudes

One of the studies which explored pharmacy healthcare assistants' perspectives, reported their findings separately whereas the other two studies reported pharmacists' and pharmacy healthcare assistants' experiences together without always making a distinction between the two groups (Downing et al., 2011; Ryder et al., 2015). Where differences between their views were noted, these will be highlighted in this section.

In total, three key areas relating to pharmacy staff experiences and attitudes were identified: privacy; suitability of pharmacy as a venue to deliver sexual and reproductive health services; and pharmacy staff new role as sexual and reproductive health providers. The key findings are summarised in Table 13.

6.6.1. Privacy

Although pharmacy staff felt that some users, and particularly young users, did not seem concerned about their privacy (Deeks et al., 2014; Parker et al., 2015), they were aware that privacy was highly important for most pharmacy users requesting a sexual and reproductive health service (Downing et al., 2011).

Pharmacy staff stated that discreetness enabled the delivery of sexual and reproductive health services (Ryder et al., 2015). Having a private consultation room therefore helped pharmacists to interact with users of sexual and reproductive health services (Gudka et al., 2009; Gudka, Marshall, et al., 2013). Pharmacy staff were concerned about having to explain sexual and reproductive health services outside a private area (Dabrera et al., 2011; Deeks et al., 2014; Parker et al., 2015) and felt that a lack of privacy interfered with their ability to provide a service (Whelan et al., 2013). When there was no designated private area or consultation room available, pharmacy staff tried to ensure confidentiality by seeking a quiet area away from the main counter and from other pharmacy users (Dabrera et al., 2011; Downing et al., 2011; Hussainy et al., 2011). Staff believed that city pharmacies offered greater anonymity compared to pharmacies located in more rural areas (Deeks et al., 2014; Parker et al., 2015), mainly because they felt it was less likely to meet an acquaintance in a large city compared to a rural area. Finally, pharmacy staff believed that fear of being seen by relatives when visiting the pharmacy was a barrier for young people to access pharmacy-based sexual and reproductive health services (Ryder et al., 2015).

6.6.2. Suitability of pharmacy as a venue to deliver sexual and reproductive health services

Both pharmacists and pharmacy healthcare assistants had a positive attitude towards the provision of sexual and reproductive health services through pharmacies (Dabrera et al., 2011; Downing et al., 2011; R. Heller et al., 2017; G. Thomas et al., 2009) and were supportive of the idea to further expand the range of sexual and reproductive health services delivered by pharmacies (Thomas *et al.*, 2010; Heller, Johnstone and Cameron, 2017; Rodriguez *et al.*, 2018).

According to pharmacists, providing sexual and reproductive health services showed the public that the pharmacy was progressive and proactive (G. Thomas et al., 2009).

Pharmacists felt that pharmacies were well placed to deliver sexual and reproductive health services because of their large clientele (G. Thomas et al., 2009) and because of their greater accessibility, longer opening hours and quicker appointments compared to other sexual and reproductive health providers such as General Practitioners and sexual health clinics (Cooper et al., 2008; R. Heller et al., 2017; Ryder et al., 2015). Pharmacy staff stated that in contrast to school clinics, pharmacies were also open during school holidays (Ryder et al., 2015).

However, while most pharmacy staff felt that pharmacies are an appropriate place to offer services related to contraception (Dabrera et al., 2011; R. Heller et al., 2017) and sexually transmitted infections (Dabrera et al., 2011; G. Thomas et al., 2009), some pharmacy staff felt that pharmacies

might not be the right place for condom distribution since they were not necessarily accessed by young males (Ryder et al., 2015). These pharmacy staff thought that pharmacies might be perceived as an intimidating environment by young males for reasons such as perceived authority status of the pharmacist, or the need to discuss sexual and reproductive health issues with female pharmacy staff (Ryder et al., 2015). Therefore, pharmacy staff suggested that additional youth-friendly condom collection points should be implemented (Ryder et al., 2015). A further concern of pharmacy staff was the provision of condoms to underage people without parental consent (Ryder et al., 2015).

A difficulty for pharmacy staff was dealing with young pharmacy users presenting in groups (Deeks et al., 2014; Ryder et al., 2015). This was because staff felt that the presence of a group of youths made them and other customers feel uncomfortable. Amongst others they were concerned whether groups of youths would steal (Deeks et al., 2014).

Further, staff were worried about pharmacy users having to wait longer to receive a service when it was busy in the pharmacy (Deeks et al., 2014; Parker et al., 2015). Other pharmacy staff did not think that waiting was an issue and stated that pharmacy users were usually prepared to wait (Deeks et al., 2014; Parker et al., 2015).

6.6.3. Pharmacy staff new role as sexual and reproductive health provider

Workload

The large majority of pharmacy staff felt that the delivery of pharmacy-based sexual and reproductive health services was feasible within their practice and that time pressure did not prevent them from offering sexual and reproductive health services (Dabrera et al., 2011; Rodriguez et al., 2018; G. Thomas et al., 2009). Only a few pharmacy staff were anxious or concerned about not being able to meet the demand due to a lack of trained staff (G. Thomas et al., 2009; Whelan et al., 2013). Nevertheless, pharmacy staff agreed that offering additional services added to their workload (Deeks et al., 2014; Parker et al., 2015).

Workload was mainly caused by administrative work such as recording pharmacy users' information and the face-to-face consultation itself (Gudka et al., 2009; Gudka, Afuwape, et al., 2013; Whelan et al., 2013). Although pharmacy staff felt that recording patient information was important, they reported that it was time-consuming and difficult (Gudka et al., 2009; Gudka, Marshall, et al., 2013; Whelan et al., 2013).

They found that some questions in the protocol on emergency contraception included irrelevant and ambiguous questions and suggested the administrative work to be simplified and to be collected electronically (Gudka et al., 2009; Gudka, Marshall, et al., 2013; Hussainy et al., 2011).

Pharmacy staff felt that the number of requests for emergency contraception had increased since it was available from the pharmacy without a prescription (Hussainy et al., 2011). Requests for this service were particularly high at the weekends and in the evenings, and pharmacy staff working

at these times reported difficulties with managing the administrative work and increased demand (Gudka et al., 2009; Gudka, Marshall, et al., 2013).

While most pharmacists were willing to take on the extra workload as part of their routine work, pharmacy healthcare assistants expected to get financial recognition for their added workload (Deeks et al., 2014; Gudka et al., 2009; Gudka, Marshall, et al., 2013; Parker et al., 2015; G. Thomas et al., 2009).

Motivation

Pharmacy staff felt that they contributed to freeing up doctors' time by taking on additional sexual and reproductive health services (Deeks et al., 2014; R. Heller et al., 2017; Parker et al., 2015). They also found it motivating to know that they were increasing access to SRHS and helping to reduce unintended pregnancy (Rodriguez et al., 2018).

Most pharmacy staff felt that their new role as sexual and reproductive health provider benefitted them personally. For example, they found that it enhanced their profession and aided them in developing their professional role as primary health provider (Cooper et al., 2008; Deeks et al., 2014; Parker et al., 2015). Pharmacy staff also felt that the new role gave them the opportunity to get involved in real health issues, and allowed them to give health messages to pharmacy users (Deeks et al., 2014; Parker et al., 2015). Further, pharmacy staff stated that it allowed them to build rapport and engage in better communication with young people (Ryder et al., 2015).

Interaction with pharmacy users

Pharmacy staff generally felt comfortable to interact with pharmacy users who were presenting for a sexual and reproductive health service (Chaumont & Foster, 2017; Downing et al., 2011; Gudka et al., 2009; Gudka, Marshall, et al., 2013; Ryder et al., 2015; Wong et al., 2017). Some pharmacy staff felt that their ability to provide sexual and reproductive health services was on par with delivering other services (Chaumont & Foster, 2017). However, some pharmacy staff found it challenging to ask users for their weight but recognised that it was not appropriate to guess users' weight based on their appearance (Wong et al., 2017).

Pharmacy staff were aware that being trained, confident and friendly had an impact on the interaction with pharmacy users (Ryder et al., 2015; Whelan et al., 2013; Wong et al., 2017).

When interacting with pharmacy users, pharmacy staff wanted to make users feel comfortable and to be perceived as youth-friendly and non-judgemental (Downing et al., 2011; Ryder et al., 2015; G. Thomas et al., 2009).

Some pharmacy staff noted that pharmacy users had a preference regarding the sex of pharmacy staff. They felt that young males did not want to be counselled by female staff whereas women appeared to be less comfortable when being counselled by male staff (Ryder et al., 2015).

While some pharmacy users seemed comfortable during the consultation according to pharmacy staff, others, and particularly young people, were quiet and nervous (Ryder et al., 2015). A difficulty

when interacting with pharmacy users was also that some users did not want to share their personal data and were not willing to send their STI screening samples to a separate agency (Debattista et al., 2017; Emmerton et al., 2011; Whelan et al., 2013).

Service Delivery

Although some pharmacy staff felt pressured by pharmacy users to provide services quickly rather than thoroughly (Wong et al., 2017), pharmacy staff generally agreed that having a consultation on sexual and reproductive health services was important to educate pharmacy users (Chaumont & Foster, 2017).

This was particularly true for the emergency contraception. Pharmacy staff felt that a standardised consultation should be compulsory for the delivery of emergency contraception (Chaumont & Foster, 2017). Both pharmacists and pharmacy healthcare assistants were supportive of over the counter access for emergency contraception and of providing an additional pack of emergency contraceptive pills to users for future use (Downing et al., 2011). Documents such as protocols used by pharmacists to guide the delivery of emergency contraception were often only available in English (Hussainy et al., 2011). Pharmacists felt that this sometimes created a language barrier when delivering services to non-English speakers (Hussainy et al., 2011).

Pharmacy staff opinions on which topic should be included in the counselling on emergency contraception varied. While most pharmacy staff felt that it was within their role to counsel on side effects, dosages, efficacy in relation to time since unprotected intercourse, and future contraception, views on whether to counsel on sexually transmitted infections were mixed (Downing et al., 2011; Hussainy et al., 2011).

Pharmacy staff were less willing to provide emergency contraception to young people (Cooper et al., 2008; Downing et al., 2011; Hussainy et al., 2011) or to someone who was presenting for emergency contraception on behalf of someone else (Chaumont & Foster, 2017; Downing et al., 2011; Hussainy et al., 2011). Further, pharmacy staff were concerned about approaching young users, married women and women in long-term relationships about chlamydia screening (Dabrera et al., 2011; G. Thomas et al., 2009).

TABLE 13 KEY FINDINGS OF INCLUDED STUDIES

First Author(s) (Year)/ Type of Study	Key Findings of included studies
Black (2008)/ Quantitative Study	• Overall, 74% (37/50) pharmacy users and 83.1% (69/83) of users of clinical services found it easy to obtain EHC from the pharmacy (p=.163) • In total, 98.9% (82/83) of clinic users compared with only 44% (22/50) of pharmacy users agreed that adequate privacy had been provided (p≤.001) • Overall, 95% (78/83) compared to 82% (41/50) of pharmacy users felt that adequate advice was provided (p=.015)

First Author(s) (Year)/ Type of Study	Key Findings of included studies
	• Only 28% (14/50) of pharmacy users compared to 90.4% (75/83) of clinic users reported that future contraception was discussed after accessing EC (p≤.001)
Chaumont (2017)/ Mixed methods study	• In total, 70.9% (134/189) of pharmacists were comfortable providing emergency contraception (as comfortable as providing other medications) • For 23.3% (10/43) of pharmacist the primary reason to refuse emergency contraception was that the person presenting was not the patient • The large majority of pharmacists felt that the consultation on emergency contraception should be mandatory and standardised • Emergency contraception should include asking for time of intercourse, previous emergency contraception usage • Most pharmacists were as comfortable providing emergency contraception as providing other medications (16.4% less comfortable providing information about emergency contraception)
Cooper (2008)/ Qualitative Study	• Some pharmacy staff were more likely give out emergency contraception to older users and were not willing to give emergency contraception to under 25-year olds • Perceived age and type of customer influenced some pharmacists' decision on whether to dispense emergency contraception (some pharmacy staff were not willing to give emergency contraception to under 25-year olds)
Dabrera (2011), England/ Qualitative Study	• Pharmacists were supportive of pharmacy-based chlamydia screening and found service provision feasible • Some pharmacists were concerned about privacy outside of a consultation room • Pharmacists were concerned about approaching young people (under 16 years) and found it more challenging to offer STI screening to users attending for non-sexual health complaints • Offering chlamydia was feasible within pharmacists' practice • Pharmacists felt that it was more challenging to offer STI screening when pharmacy users are attending for non-sexual health complaints
Darin (2015) / Quantitative Study	• Speed (22/52) and convenience (16/52) (easy to schedule; accessible, convenient) were the most favourable features of pharmacy users experience • Lack of privacy at the counter was something users (3 out of 15) did not like about the pharmacy, 'Private' and 'confidential' was something that users (7 out of 52) liked about the pharmacy • Most pharmacy users felt comfortable with the pharmacist performing the fingerstick test (similar to the proportion who felt comfortable with a physician taking the test) • Pharmacy users like that pharmacists are nice, polite, friendly, kind, understanding or supportive

Debattista (2017) and Emmerton (2011) / Mixed methods study	• While pharmacy staff were supportive of pharmacy-based chlamydia screening, some were concerned about the workload • Pharmacy staff reported that pharmacy user felt uncomfortable submitting her chlamydia test to another agency
Deeks (2014) and Parker (2013)/ Mixed methods study	• Pharmacy users were highly satisfied with the pharmacy-based chlamydia screening service • With exception of some young users, most pharmacy users felt comfortable discussing chlamydia with pharmacy staff • Pharmacy users liked that they could attend the pharmacy for several health concerns at the same time and liked the one-site experience • Pharmacy users found pharmacy-based screening an easy and practical way to get screened • A lack of privacy in the pharmacy and talking to a pharmacist rather than a GP were stated as barriers by some participants • Further barriers to pharmacy-based chlamydia included: confidentiality (because of other people around; fear of being overheard) • Most young people felt that a community pharmacy is an appropriate place for chlamydia testing • Most pharmacy users felt that appropriate information was provided • Facilitators for chlamydia testing in pharmacies: Accessibility; one-site experience; no need to book an appointment; no need to travel a long distance and pay • Pharmacy assistants felt that offering services increased their job satisfaction (felt like they were involved in real health issues and giving health messages; felt they were helping the doctor) • Pharmacy assistants felt they should get paid for extending their scope and for training and added workload • While some pharmacy users seemed to be concerned about privacy others, particularly young people, did not seem concerned • Pharmacy assistants were anxious about longer waiting times for users due to offering chlamydia screening • Pharmacy users presenting in groups were concerning to pharmacy staff
Downing (2011)/ Mixed methods study	• Pharmacy staff were aware of the importance of privacy and tried to seek a quiet consultation area away from the counter/other customers if no consultation room was available • Young age (65%; 28/43) and the person presenting not being the patient needing emergency contraception (32%/ 14/43) were reasons for staff refusing EC provision • 85% of pharmacists (109/128) and 72% of non-pharmacist staff (271/295) agreed that advice on STIs and future contraception should be provided after emergency contraception • Reasons to refuse EC dispense included young age • Pharmacy staff were supportive of pharmacy-based provision of EC • Pharmacy staff were supportive of giving a resource pack to customers when dispensing EC • It was important to pharmacy staff to be known as youth friendly
Gudka (2013) and Gudka (2009) /	• 87% (79/91) of pharmacy users stated in a survey that they were not concerned about privacy; however, in a later survey, almost half of the same participants stated that they experienced a lack of privacy and in a focus group, users said that they would not feel comfortable

Mixed methods study	discussing sexual health at the counter and preferred a private consultation area • Pharmacy users liked that the service was convenient to use, and no appointments needed to be booked • Pharmacy users felt that pharmacists handled consultations professionally and provided clear and concise information • Some pharmacy users found it inconvenient that they had to return their sample to a designated place and wanted a more convenient and simpler process; further, they found it inconvenient that the only way to get the test results was to call the hospital during working hours • Pharmacy users felt that pharmacists handled consultations professionally and provided clear and concise information (lay language) • Pharmacists were supportive of service provision; felt service provision was important and gave them the opportunity to participate in public health initiatives in sexual health • Pharmacists felt provision helped them to develop their professional role as primary healthcare provider • Pharmacists were supportive of service provision but felt that the administrative work and documentation of services was time consuming (particularly at weekends and evenings demand was higher which was demanding for pharmacists working at these times; found service implementation difficult at these times) • Pharmacists suggested to simplify the administrative work • Pharmacists wanted adequate compensation for their time
Gudka (2014)/ Quantitative Study	• Most women (69%; 73/113) found it very easy/ easy to get to the pharmacy and felt very comfortable/comfortable discussing emergency contraception with the pharmacist • In a questionnaire, 48% (54/113) of women stated to be unconcerned/very unconcerned about privacy in the pharmacy; 29% (33/113) were unconcerned/very unconcerned about privacy
Heller (2017)/ Mixed methods study	• Although most pharmacy users had a positive experience with the service delivery, some experienced difficulties (no trained staff available in chain pharmacies) • Pharmacy users found it easy to use the service and were supportive of pharmacy-based contraceptive injection • Pharmacists acknowledged that features of the pharmacy were appealing for users when compared to other providers and felt that the pharmacy was an appropriate place for contraceptive services • Some pharmacy users were concerned about pharmacist's ability to give the injection (apparently lacked familiarity; seemed anxious) • Pharmacists were anxious to provide injection (because of invasive nature of service and high responsibility to get it right) • Pharmacists acknowledged that convenient location, better opening hours and quicker appointments than general practices or sexual health clinics make pharmacies appealing • Pharmacists felt they contributed to public health care through 'freeing up' doctors and thus helping the health care system which is under pressure • Pharmacists were enthusiastic and willing to expand their role and believe that there is more that they can do; about half of pharmacists were pleased to deliver the contraceptive injection • Pharmacists felt that the pharmacy was an appropriate venue for contraceptive services and advice
Hussainy (2011)/	• 59.7% (256/427) of pharmacists refused emergency contraception when the person presenting was not the person needing emergency contraception

Quantitative Study	• 59.5%[2] of pharmacists preferred to counsel on EC in an area of pharmacy where confidentiality could be assured or in a separate area away from other pharmacy users • Most pharmacists counselled on EC side effects (90.2%), dosage (91.8%), efficacy in relation to time since unprotected sexual intercourse (88.8%); 81.9% (345/421) of pharmacists felt that it is their role to counsel on regular contraception but only 54.5% (229/420) felt that pharmacists should counsel on STI
Michie (2016)/ Qualitative Study	• Women used the pharmacy because they had difficulties accessing contraception elsewhere and did not want to plan an appointment in advance • Women felt that the information given to them about contraception was clear • Women were given information and had the opportunity to ask questions; some left with questions which they felt they were not able to ask at the time • Women felt that the information given to them about contraception was clear
Ragland (2015) and Ragland (2015)/ Quantitative Study	• The majority of both clinic users (86.6%; 100/116) and pharmacy users (81.4%; 71/87) rated 'strongly agree' on being satisfied with counselling (p=0.523) • Pharmacy users (n=87; mean ± SD: 3.6±0.6) rated significantly lower (p=0.034) the statement that the counselling helped them understand EC use compared to clinic users (n=116, mean ± SD:3.8±0.4) • Most pharmacy users were supportive of EC counselling through pharmacies
Rodriguez (2018)/ Quantitative Study	• 87.6% of (106/121) pharmacists felt comfortable during counselling • The majority of pharmacists felt that contraception is feasible within their practice and that it improved their job satisfaction
Ryder (2015)/ Qualitative Study	• According to pharmacists, young users were uncomfortable when requesting condoms • Pharmacy staff felt that dealing with groups of people together is problematic • Some pharmacy staff felt that young males do not use the pharmacy for condoms as the pharmacy might be seen as an intimidating environment due to having to talk to female staff • Many pharmacists felt that it was their duty to make the environment non-judgmental for youth • Pharmacy staff thought that the accessibility and long opening hours and no need to book an appointment, and accessibility during school holidays was appealing to young people • Pharmacy staff felt that offering services helped them to build rapport with young people • Pharmacy staff felt that dealing with groups is problematic (e.g. groups of youth laughing created an uncomfortable atmosphere for users) • Some pharmacy staff were concerned about handing out condoms to young people without parental consent • Pharmacy staff felt that rude, untrained or new staff could create a bad experience for pharmacy users

[2] Where percentages are presented without the numbers that they are derived from this is because they were not provided in the study manuscript.

	• Pharmacy staff thought that not enough pharmacies taking part in the scheme was a barrier to service delivery • Pharmacy staff felt that young people being concerned that they may see a relative when visiting the pharmacy might be barrier to service delivery • Some pharmacy staff believed that cultural aspects might be a barrier for youth from particular ethnicities
Thomas (2010)/ Mixed methods study	• Pharmacists were concerned to offer screening to 'older' individuals because they might be in a long-term relationship and might feel offended by being offered the service • No pharmacists wanted to approach clients in long-term relationships, married people or people with children (pharmacists perceived ethnic minorities to be more likely to be married and faithful) • Most pharmacists believed that pharmacies are well placed to deliver chlamydia screening because of their large clientele and felt that it was feasible within their practice; some pharmacists were concerned that increasing the use of locums could hinder service expansion since locums are often untrained • Pharmacists wanted users to like the service and feel comfortable • Pharmacists felt that users are generally prepared to wait
Whelan (2013)/ Quantitative Study	• The factors interfering most with pharmacists' ability to provide EC were lack of privacy (46.1%; 195/422) and lack of staff (50.9%; 219/422)
Wong (2017)/ Qualitative Study	• Some pharmacists felt conflicted in their roles as a health care professional and a drug dispenser (pharmacists felt pressured by users to provide fast services rather than detailed counselling) • Most pharmacists were comfortable during counselling and believed that users were also comfortable • Pharmacists felt that it is difficult to ask users sensitive questions • Pharmacists strongly believed that EC counselling was important • Pharmacists asked pharmacy users whether they have had EC before and about the time that sexual intercourse had occurred; they also explained how to take EC and described possible side effects EC; often ongoing oral contraception was recommended • Most pharmacists were comfortable during counselling and believed that users were also comfortable; However, some pharmacists felt that women might feel uncomfortable being counselled by male pharmacists and if there is not enough privacy provided • Pharmacists felt that it is difficult to ask pharmacy users for their weight in counselling

6.7. Discussion

First, the findings from this study are summarised. Afterwards, the strengths and limitations of this systematic review are discussed, before comparing these to the existing literature. At the end of the chapter, it is summarised how this study can inform the qualitative interview study, which is presented in chapter 7 and chapter 8.

6.7.1. Summary of the main findings

This systematic review aimed to explore what is known about pharmacy users' and pharmacy staff experiences and attitudes relating to delivering a large range of sexual and reproductive health services.

Nineteen studies were included in this review. Eleven studies only looked at pharmacy staff perspectives (n=11) and four studies looked at pharmacy users' perspectives. A further four studies looked at both pharmacy staff and pharmacy users' perspectives (n=4). Only two studies looking at pharmacy staff included pharmacy healthcare assistants as study participants.

The majority of studies focussed on one type of intervention (n=16). Only three studies looked at two types of interventions and no study explored more than two different interventions. The sexual and reproductive health services in the included studies are as follows: emergency contraception, oral contraception, contraceptive injection, chlamydia screening, HIV screening, and condom distribution.

The Mixed Methods Appraisal Tool was used to assess the quality of all included studies. Overall, ten studies were considered as high-, four as medium- and five as low-quality studies.

The findings from the included studies were presented according to the population type: pharmacy staff and pharmacy users. Outcomes from the included studies were described to identify patterns within and between studies.

Three areas of importance (privacy; convenience; and pharmacy staff as sexual and reproductive health providers) were identified for pharmacy users. For pharmacy staff, three areas of importance were also identified (privacy; suitability of pharmacy as a venue to deliver sexual and reproductive health services; and pharmacy staff new role as sexual and reproductive health providers).

Pharmacy users had mixed experiences of privacy. While some were not concerned about their privacy, others were concerned about being overheard, particularly at the pharmacy counter. Compared to clinic users, pharmacy users were less satisfied with the level of privacy provided. Nevertheless, pharmacies were perceived as suitable for the delivery of sexual and reproductive health services, particularly because they were convenient to use. Pharmacy users liked that pharmacies were easy to get to and that no appointments needed to be scheduled.

However, some inconveniences with the pharmacy as sexual health provider were also identified: for example, not having trained staff available at all times and having to wait longer for STI test results were identified to be disadvantages of the pharmacy. While pharmacy users largely had positive experiences with pharmacy staff consultations, they were less satisfied with the consultation and information provided compared to individuals who were counselled by sexual health clinic staff or General Practitioners. Pharmacy staff were found to be capable of conducting a blood test, but some users perceived pharmacy staff as less competent to provide the contraceptive injection.

Pharmacy staff were aware that privacy was important to many users and therefore tried to counsel in private areas and separate consultation rooms. Overall, pharmacy staff considered that pharmacies were suitable to deliver sexual and reproductive health services, although some staff questioned whether they were well placed to deliver condoms. Staff were largely comfortable counselling users but noted that counselling by a person of the same sex was important to many users. While the sexual and reproductive health service delivery was generally feasible, administrative work and consultation time added to staff workload and was sometimes challenging, particularly at times where the pharmacy was busy. Staff generally reported that they thought that providing a sexual and reproductive health consultation was important. However, they sometimes felt pressured by pharmacy users to deliver a service quickly rather than thoroughly. Finally, staff felt that a pharmacy delivered service could take pressure off other health providers, benefitted the pharmacy staff employability, and enhanced their job satisfaction.

6.7.2. Strengths and Limitations

This was the first systematic review providing an overview of the literature relating to pharmacy staff and pharmacy users' experiences of a wide range of pharmacy-based sexual and reproductive health services. A strength of this review was that a systematic and robust approach was utilised. Further, including qualitative, quantitative and mixed methods approaches allowed a robust evaluation of all existing literature. Only studies from OECD member countries and those published after 2007 were included to ensure that the review findings were relevant and could inform the field work in the UK. Guidance on how to conduct a narrative synthesis was followed to increase the transparency and reliability of this review.

The review excluded mystery shopper studies as the focus was on the 'real' experience of pharmacy users. However, in hindsight, it may have been useful to compare the experience of mystery shoppers and 'real' users of pharmacy-based SRHS to understand whether there are differences between the two groups.

As discussed, the included studies were of variable quality and were not always reported in line with a recognised study reporting framework, having missing data and significant risk of bias. Findings were not weighed according to the quality assessment. This meant that the review findings may not provide a reliable summary of users' and staff experiences.

The methods section of this review explained that studies which used mystery shoppers to explore pharmacy-based sexual and reproductive health services were excluded as this group's experiences might have differed from 'real' users. However, the inclusion of mystery shopper studies may have added to the findings.

Due to financial pressure many service providers and commissioners are looking towards alternative settings to provide sexual and reproductive health services. Therefore, the findings of this review are important for future service planning.

6.7.3. Comparison with other studies

Convenience was identified as a highly valued feature of pharmacies by both pharmacy users and pharmacy staff. This supports findings of previous reviews on pharmacy-based chlamydia screening (Gudka, Afuwape, et al., 2013), emergency contraception (C. Anderson & Blenkinsopp, 2006) and STI screening (H. Wood & Gudka, 2018) but also reviews on pharmacy services other than sexual and reproductive health services (Ali M.K. Hindi et al., 2019), confirming that pharmacies are generally perceived as convenient venues to access a variety of healthcare services, including sexual and reproductive healthcare.

While this was not true for all pharmacy users, many had privacy concerns and pharmacy staff were aware that privacy is important to users of sexual and reproductive health services. This is in line with a recent systematic review on extended pharmacy services (Ali M.K. Hindi et al., 2018) and studies on various other pharmacy services including cardiovascular screening (J. Taylor et al., 2012), advice for undiagnosed skin problems (Tucker & Stewart, 2015), vaccination or health checks (K. Wood et al., 2015), alcohol screening and advice services (Krska & Mackridge, 2014), and pharmacist prescribing services (D. C. Stewart et al., 2011). Particularly, young people were found to be concerned when accessing the pharmacy for contraception for privacy reasons (Zuniga et al., 2019). Hence, lack of privacy at the pharmacy does not seem to be a concern unique to users of sexual and reproductive health services.

This review showed that pharmacy staff were less willing to provide emergency contraception to young women. This has also been shown in studies which used mystery shoppers to explore access to pharmacy-based emergency contraception. For example, one study from France showed that more than thirty percent of minors were refused pharmacy access to emergency contraception (Delotte et al., 2008). In another study from California, only thirty-six percent of young mystery shoppers were successful in obtaining emergency contraception (Sampson et al., 2009). Adolescents experiencing difficulty obtaining emergency contraception was also shown in another study from the US (Wilkinson et al., 2014). Unintended pregnancy can pose several complications, particularly for teenagers, who have a higher risk of pre-term birth, pre-natal and post-partum depression (Kallner & Danielsson, 2016). The prevention of adolescent pregnancies is therefore of high importance (Kallner & Danielsson, 2016). Declining emergency contraception to adolescents may contribute to higher rates of teenage pregnancy.

Rather than denying young people access to sexual and reproductive healthcare, pharmacies should ensure that young people receive adequate safeguarding to assess risk and initiate disclosures of sexual exploitation and are provided with the help and healthcare they need. It is estimated that more than 16,000 children in England were at risk of sexual exploitation between April 2010 and March 2011 (Berelowitz et al., 2012). It is further predicted that teenage girls are at higher risk of sexual exploitation and teenage pregnancy due to the school closure during the COVID-19 pandemic (Burzynska & Contreras, 2020). Hence, pharmacies are likely to be an important point of contact for young people to seek help. Sexual and reproductive health providers should support pharmacies by providing safeguarding training and subsequent support to audit to ensure good practice is being implemented.

Further, our review showed that while pharmacy staff felt that counselling on future contraception was important, fewer pharmacy users than clinic users of emergency contraception were provided with advice on future contraception. In line with this, a previous mystery shopper study showed that only a minority of pharmacy users presenting for emergency contraception were provided with advice on contraception (Glasier et al., 2010). Discussing future contraception is highly important to prevent subsequent unwanted pregnancy.

The findings from the current review suggest that female users of pharmacy-based sexual and reproductive health services were more comfortable with a female staff member. Women's preference for a same sex health care professional has been shown in different contexts. For example, females have found to prefer female gynaecologists-obstetricians (Amer-Alshiek et al., 2015) and gastroenterologists (Consedine et al., 2011). Preferences for a female healthcare professional have also been identified in studies on women's preferences on breast surgeons (Groutz et al., 2016) and urogynecologists (Groutz et al., 2019). The latter study showed that the preference for a female healthcare professional were common among religious and university-educated women compared to non-religious and high school or college graduates (Groutz et al., 2019).

Pharmacy staff in one of the included studies felt that the pharmacy may not be the ideal venue for condom distribution as young males do not use the pharmacy frequently. One concern was that males may not want to approach female staff for condoms due to embarrassment. Indeed, a cross-sectional probability sample survey showed that young males under 18 years were less likely than those over 18 years to obtain contraception from a retail setting including pharmacies (French et al., 2018). Men have generally been shown to be less likely than women to access health information from pharmacies (Banks, 2001). In line with this, previous studies have demonstrated that males also prefer same-sex health care professionals. For example, one study showed that males prefer male urologists (Amir et al., 2016). Further, a study from Botswana showed that particularly younger men preferred a male healthcare professional when presenting for services related to sexually transmitted infections (Letshwenyo-Maruatona, 2017).

It is likely that men have stronger preferences for the sex of the healthcare professional when it comes to health matters which they perceive as more sensitive (Letshwenyo-Maruatona, 2017).

This review showed that pharmacy users were largely comfortable discussing sexual and reproductive health with the pharmacist. This was also found in a recent systematic review on patient and public perspectives of community pharmacies (Ali M.K. Hindi et al., 2018). In line with this, another study showed that patient-pharmacist interaction consistently met or exceeded the expectations of pharmacy users (Collum et al., 2013).

Pharmacy staff in this review felt that they were contributing to the reduction of workload for General Practitioners. Taking work pressure from General Practices through the provision of extended services was also identified as a benefit by pharmacy staff in other studies (Agomo et al., 2016; Atkins et al., 2016). However, in a recent study, General Practitioners were not convinced that extended services provided by pharmacies would reduce their workload (Ali M.K. Hindi et al., 2019).

Relating to the topic of workload, pharmacists found that the service provision was feasible but that the delivery of sexual and reproductive health services such as emergency contraception added workload through the consultation time and the related administrative work. A separate systematic review showed that pharmacy staff in the UK felt that their workload levels were increasing and that increased workload added stress and lowered the job satisfaction (V. M. Lea et al., 2012). In a more recent study on pharmacists' perspectives on prescribing hormonal contraception, workload was a concern for pharmacists (Wollum et al., 2020). Another review on extended services found that pharmacists experienced it sometimes as difficult to manage the delivery of extended services next to their dispensing duties (Ali M.K. Hindi et al., 2019). It has to be considered that the studies included in the current review only evaluated one or two sexual and reproductive health services. However, some pharmacies now provide a large range of sexual and reproductive health services and how staff manage the delivery of multiple services should be further explored.

While pharmacists were less likely to demand remuneration for the additional time and work required to perform sexual and reproductive health services, some pharmacy healthcare assistants felt that they should get financial incentives to provide extra services. The review on extended pharmacy services found that pharmacists collectively agreed that the remuneration was insufficient for the added workload (Ali M.K. Hindi et al., 2019).

6.7.4. Remaining gaps in the literature

This systematic review clearly shows that there is scope for future research on pharmacy-based sexual and reproductive health services. Only 19 studies exploring pharmacy staff and/or users experiences of pharmacy-based sexual and reproductive health services exist. Only four of those studies were from England.

None of the included studies have investigated pharmacy services that provide more than two different sexual and reproductive health services. Further, no study has looked at chlamydia treatment, hepatitis B vaccination, partner notification and self-sampling kits testing for a large range of STIs (including syphilis, hepatitis B and gonorrhoea).

This review also showed the lack of qualitative research in this area, particularly from England. Only five qualitative studies on the experiences of pharmacy-based sexual and reproductive health services were identified. While all five of these studies looked at pharmacists' experiences, only one also looked at pharmacy users experiences. The latter study only looked at women's experiences and consequently there was no qualitative study including male pharmacy users. Further, only one qualitative study included pharmacy healthcare assistants' experiences of pharmacy-based sexual and reproductive health services. Only two of the five qualitative studies originated from England and only one of them was high quality. Hence, high-quality qualitative research on pharmacy-based sexual and reproductive health services from England is limited to only one study exploring pharmacists' views on emergency contraception.

Therefore, the conduct of a qualitative study in England looking at pharmacists, pharmacy healthcare assistants and pharmacy users' experience of a large of pharmacy-based sexual and reproductive health services was needed.

6.8. Chapter summary

This chapter summarised the findings from the systematic review results and discussed the findings. In total, nineteen studies were included in the review. Eleven studies included pharmacy staff, four included pharmacy users, and four both groups. Pharmacy users found services accessible and convenient and pharmacy staff found it feasible to deliver services. However, several barriers to the delivery of pharmacy-based SRHS were identified including lack of privacy for delivering services, lack of trained staff consistently available to deliver services and subjective judgements being made on who should be provided a service. Barriers to service delivery need to be addressed to use pharmacies full potential.

The systematic review showed that there is a need for further exploration of pharmacy-based sexual and reproductive health services, and qualitative research from England in particular. This systematic review informed the qualitative study, which is presented in the following two chapters (chapter 7 and chapter 8).

7. Interview Study Methods

7.1. Chapter overview

This chapter reports on the conduct of the qualitative research study with pharmacy users and pharmacy staff in Birmingham. First, the aims and objectives of the interview study are presented, followed by the research study design, study setting and study population. Next, the sampling and participant numbers are discussed, and the recruitment strategies outlined. Afterwards, ethical concerns and all approvals obtained for the study are introduced and the data collection process described. It is then explained how the data was analysed and interpreted. The chapter closes with a chapter summary.

7.2. Aim and objectives

7.2.1. Aim

- Based on the findings of the systematic review and retrospective quantitative study, to explore pharmacy users' and staff experiences of pharmacy-based sexual and reproductive health services and to explore the implementation of pharmacy-based sexual and reproductive health services

7.2.2. Objectives

- To explore pharmacy users', pharmacists' and pharmacy healthcare assistants' experiences of pharmacy-based sexual and reproductive health services and to explore their implementation using semi-structured interviews

7.3. Study Design, Study Setting & Study Population

This qualitative study was set in community pharmacies in Birmingham (England). Semi-structured interviews were conducted with the population of interest, which included pharmacists, pharmacy healthcare assistants and pharmacy users.

Umbrella pharmacies operate at a 'Tier 1' or 'Tier 2' level. Pharmacies offering the 'Tier 1' level offer: emergency contraception, condoms and STI self-sampling kits. 'Tier 2' pharmacies offer 'Tier 1' services and in addition the contraceptive injection, oral contraception and chlamydia treatment.

Pharmacy staff, including locum pharmacists (pharmacists that are employed on a contractual basis through an agency), were invited to take part in a semi-structured interview if they fulfilled the following criteria:

- be a pharmacist or pharmacy healthcare assistant working at an *Umbrella* pharmacy ('Tier 1' or 'Tier 2') at the time of the interview
- have completed the necessary training allowing the participant to provide *Umbrella's* pharmacy-based sexual and reproductive health services

Pharmacy users wishing to participate in an interview were required to:

- be at least 16 years old at the time of the interview
- have used a sexual and reproductive health service provided by pharmacy staff in an *Umbrella* pharmacy
- have the ability to adequately understand verbal explanations or written information in English
- have the ability to consent for themselves

The age when a child is deemed to be capable to consent to sex varies internationally (Ueffing et al., 2019). Although the legal age to consent to any form of sexual activity is 16 years in England, British adolescents under 16 years are sexually active (Scott et al., 2017) and therefore are at risk of STI or unwanted pregnancy. Although it is important to understand children's experiences of pharmacy-based sexual and reproductive health services (Horgan, 2017), pharmacy users under the age of 16 years were not eligible to take part in an interview due to ethical and methodological issues. Under 16 year olds are legally not permitted to consent for their research participation but require parental consent (Roper et al., 2018). Obtaining parental consent may be difficult for individuals who don't want to admit their sexual activity to their parents. Further, conducting interviews with children can be difficult and may require the usage of specific methods appropriate for children (Winstone et al., 2014). Researchers should also have training in interviewing children and since this was not in place it was decided to exclude them from participation (S. Paul, 2017).

Research involving adults lacking capacity requires a surrogate to provide consent on their behalf. However, this raises ethical and legal issues which often creates a barrier to the participation of people who lack decision-making capacity in research (Shepherd, 2016). Due to practical reasons, it was decided not to interview people lacking capacity.

Studies in which language barriers exist between the researchers and the participant are referred to as 'cross-language research' (Temple, 2002). While translators and interpreters can help to overcome language barriers, the quality of data translation remains a concern and can affect the accuracy of study findings (Squires, 2008). Hiring a translator or interpreter would have added costs and introduced ethical concerns. It was decided not to interview people with special communications needs (e.g. requiring a translator or interpreter) as this would have gone beyond the scope of this project.

7.4. Sampling

Consideration to the sampling method was given prior to recruitment and it was decided to adopt a purposive sampling framework in order to guide the recruitment. Purposive sampling is a non-random technique (Etikan et al., 2016) that is typically used in qualitative research to identify and select information-rich cases (Patton, 2002).

There are numerous purposeful sampling strategies, some of which are used to narrow the range of variation (e.g. homogenous sampling, snowball sampling) and some of which are used to expand the range of variation (e.g. maximum variation sampling, extreme case sampling) (Palinkas et al., 2015).

Previous research suggests that demographic characteristics such as ethnicity (Marlow et al., 2009), age (Hussainy et al., 2011), gender (Hussainy et al., 2011) and religion (Cooper et al., 2008; Marlow et al., 2009; Mollen et al., 2008) may impact people's attitudes towards sexual and reproductive health services. With regards to pharmacy staff, the numbers of years working as a pharmacist has been shown to impact health providers' attitudes towards SRHS (Ibrahim et al., 2013). It was therefore initially intended to maximally vary candidates according to a range of different parameters (e.g. ethnicity, age, gender and religion).

However, sampling to large range of parameters would have required participants to provide personal information before being invited to take part in an interview. Given that sexual and reproductive health is a sensitive topic, it was considered that participants, and pharmacy users in particular, may not have been willing to share their demographic details before being invited to an interview. It was therefore decided, to purposively sample according to a range of other factors that would ensure important and relevant variety in candidates interviewed.

Relevant parameters for pharmacy staff included:

- Service level offered at *Umbrella* pharmacy employed at (Tier 1 or/and Tier 2)
- *Umbrella* pharmacy store (e.g. independent/chain pharmacy; location of pharmacy)

Relevant parameters for pharmacy users included:

- Type SRHS requested at *Umbrella* pharmacy (emergency contraception, oral contraception, contraceptive injection, condoms, STI self-sampling kits, chlamydia treatment)
- *Umbrella* pharmacy store (e.g. independent/chain pharmacy; location of pharmacy)

As outlined previously (e.g. in section 1.7), 'Tier 1' and 'Tier 2' pharmacies offer different types of service levels. While 'Tier 1' pharmacies deliver emergency contraception, condoms and STI self-sampling kits, 'Tier 2' pharmacies deliver a wider range of services. Interviewing staff with experience from both 'Tier 1' and 'Tier 2' pharmacies was therefore deemed to be important to understand whether and how delivering different service levels impacts staff experience. Since pharmacy stores vary in their layout, their clientele, their location and their staffing level, experiences of providing or being provided with a sexual and reproductive health services may vary between different pharmacy stores. It was therefore considered to be an important parameter for both pharmacy staff and pharmacy users.

This aim of this project was to explore experiences of a wide range of sexual and reproductive health services. Therefore, it was intended to interview pharmacy users who had access different types of *Umbrella* pharmacy services.

Pharmacy staff and pharmacy users were asked to provide information on the relevant parameters above. Based on their answers, J.G. selected candidates that fitted the sampling frame.

To provide the reader with context on whether perspectives from different groups were explored (Fossey et al., 2002; Tong et al., 2007) (Sifers et al., 2002), demographic information was collected on all study participants interviewed. Since evidence suggests that demographic questions may be best placed once rapport could be built (Teclaw et al., 2012), demographic information was obtained from study participants at the end of the interview (see section 7.7.3 for more detailed information).

7.5. Participant numbers

There is a lack of research exploring the optimal number of participant interviews and in many interview studies participant numbers are not reported and not justified (M. N. K. Saunders & Townsend, 2016). Saturation is commonly used as criterion for discontinuing data collection used in qualitative research (Glaser & Strauss, 2017). However, the term “saturation” is inconsistently applied (Malterud et al., 2016; B. Saunders et al., 2018).

When using saturation to justify the discontinuation of data collection it is important to explain how data saturation was defined. In line with Grady (1998), data saturation was defined for this study as the point where no new themes were identified.

7.6. Recruitment

Recruiting participants for qualitative health research can be challenging, particularly for students who have limited experience, time, funds and established rapport with gatekeepers (Namageyo-Funa et al., 2014). Further, recruiting participants for qualitative research on sensitive topics can be difficult (Namageyo-Funa et al., 2014). In health research, it is therefore common to employ several strategies to facilitate recruitment (Namageyo-Funa et al., 2014). Although multi-modal approaches require more time and effort compared to using a single recruitment method, they are beneficial as they can strategically balance the advantages and disadvantages of different recruitment methods (McRobert et al., 2018). Recruitment for this study lasted nine months (January 2019 to September 2019). The recruitment strategies are presented along the two different study populations: pharmacy staff and pharmacy users. An overview of all recruitment pathways is presented in Figure 6.

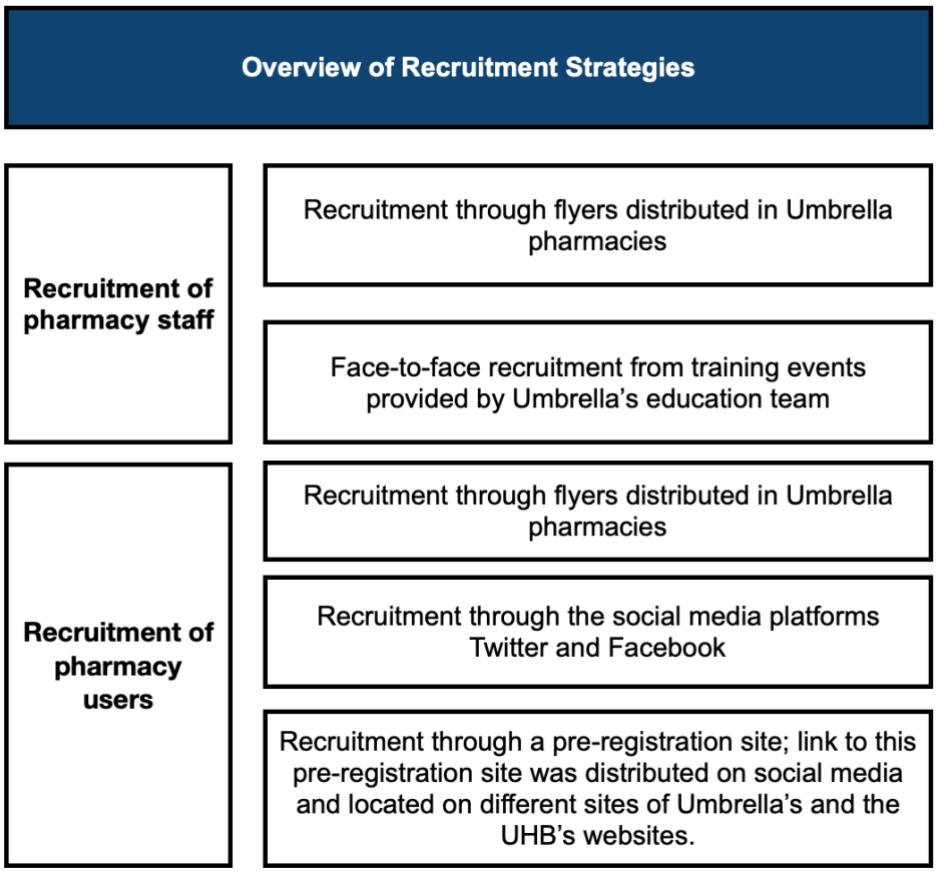

FIGURE 6 RECRUITMENT PATHWAYS FOR PHARMACY STAFF AND PHARMACY USERS

7.6.1. Recruitment of pharmacy staff

Two recruitment strategies were employed to recruit pharmacy staff. First of all, they were recruited through flyers distributed through participating *Umbrella* pharmacies. Secondly, they were recruited face-to-face through training sessions and events.

7.6.2. Recruitment through flyers

Recruitment through flyers is a traditional recruitment method (Pedersen & Kurz, 2016) that has been used in previous studies on sexual and reproductive health services to recruit participants alongside other recruitment strategies (Chai et al., 2010; Darin et al., 2015).

Letters inviting *Umbrella* pharmacies to support the recruitment of the study by distributing flyers to their staff were sent via email. Additionally, the PhD candidate (J.G.) attended meetings of the Local Pharmaceutical Committee in Birmingham and *Umbrella* pharmacy meetings to introduce the study and invite pharmacy representatives to spread flyers through their *Umbrella* pharmacy stores.

Pharmacy representatives who were interested in supporting the recruitment of the study could approach Julia Gauly and provide their contact details. Pharmacies who decided to go forward with the support of the recruitment were then provided with a Schedule of Activities (SoA).

This is a document which can be used with participating organisations as a form of site agreement provided by the Health Research Authority (HRA). Pharmacies signed the SoA and sent it back to Julia Gauly. Julia Gauly then posted the flyers to the pharmacy or dropped them off in person. The flyers were aimed at both pharmacists and pharmacy healthcare assistants. Copies of the flyer are attached in Appendix 6. It was up to the pharmacy how to distribute the flyers.

Some stated that they were giving them directly to their staff and others reported that they placed them in the common room for pharmacy staff.

Only a small number of pharmacies (n=8) agreed to support the recruitment through flyers. It may be that pharmacies did not want to commit to handing out flyers due to time constraints. However, it could also be possible that pharmacies feared that interviews conducted with pharmacy staff might reveal negative experiences with the pharmacy and were concerned that this may reflect poorly on them.

In order to be able to recruit pharmacy staff from a wider range of pharmacies, another recruitment method was added. This is described in the following section.

7.6.3. Face-to-face recruitment

Research has shown that people are more likely to participate in research when they are directly approached by researchers rather than when they have to approach the researcher to take part (Hewison & Haines, 2006). An advantage of face-to-face recruitment is that rapport can be built and misconceptions about the purpose and procedures of the study be addressed without delay (Badger & Werrett, 2005; Broyles et al., 2011). Although it is time-consuming, it was therefore decided to recruit pharmacy staff face-to-face.

Pharmacy staff were recruited face-to-face from meetings with the Local Pharmaceutical Committee in Birmingham, *Umbrella* pharmacy meetings and *Umbrella* pharmacy staff training events. Training sessions were compulsory for pharmacists to attend and were conducted in function rooms in Birmingham by *Umbrella*'s education team. In contrast, training sessions for pharmacy healthcare assistants were voluntary for them and completed within pharmacy stores during working hours by *Umbrella*'s education team. When recruiting face-to-face, Julia Gauly introduced herself and her study and collected contact details from interested candidates. They were contacted the following day via text message, phone call or email and provided with the information sheets for the study. Interviews were scheduled with those who had considered the study information for at least 12 hours and agreed to take part.

7.6.4. Recruitment of pharmacy users

Originally, it was planned that pharmacy users would be recruited directly from the pharmacy; however, this was not approved by the ethics committee. This decision was made to protect the researcher's safety. Instead, pharmacy users were also recruited through flyers handed out to them by pharmacy staff at pharmacies who agreed to support the recruitment of pharmacy users. Additionally, pharmacy users were recruited online.

Recruitment through flyers

All eight pharmacies that had agreed to distribute flyers to their pharmacy staff also agreed support the recruitment of pharmacy users (see section 7.6.2). Pharmacy staff working in these pharmacies were asked to hand out flyers to pharmacy users who had attended for an *Umbrella* service. A copy of the flyer aimed at pharmacy users is provided in Appendix 6. Pharmacy staff reported that they placed the flyers in their consultation room and behind the counter and handed them to users of *Umbrella's* services at the end of the consultation. Pharmacies were not asked how many flyers they had handed out to keep the added workload for pharmacy staff to a minimum. In order to recruit pharmacy users from a wider range of pharmacies, pharmacy users were also recruited online. This is outlined in the next section.

Online Recruitment

Online recruitment is cost effective and time-efficient (Batterham, 2014; L. S. Leach et al., 2017). It was therefore considered as suitable recruitment strategy for this study.

With their increased popularity, researchers have realised the potential of utilising social media platforms for the recruitment of participants (Arigo et al., 2018). While Facebook is the most popular social networking site worldwide, Twitter is the most popular microblogging platform (Gu et al., 2016). It was therefore decided to use both platforms to recruit pharmacy users.

Julia Gauly and *Umbrella*'s communications team used their Twitter and Facebook accounts to raise awareness for the study. An example of a social media post is presented in Figure 7.

FIGURE 7 EXAMPLE: SOCIAL MEDIA POST

Additionally, a secure online pre-registration website was established by *Umbrella*'s communications team. Pre-registration websites have shown to be effective in the recruitment in health research (Hamilton et al., 2013; J. Paul et al., 2005), particularly in ensuring that participants meet the participant criteria (Fernández et al., 2004).

On the pre-registration site interested candidates were informed about the interview study. They were also informed that all participants would be given a £10 shopping voucher as thank you for their participation. To be considered for the study, interested candidates were asked to indicate the following information:

- whether they had visited an *Umbrella* pharmacy
- which *Umbrella* service(s) they had accessed
- their contact details (either email address or phone number)

When recruiting through websites it is important to target the relevant sites (Fernández et al., 2004). The link to the pre-registration website was placed on four different locations of *Umbrella*'s website. First of all, the link to the pre-registration website was placed on the 'contact us' section of *Umbrella*'s website. *Umbrella* is part of the University Hospitals Birmingham and the link was therefore also placed on the site linking from the University Hospitals Birmingham website to *Umbrella*. Further, the link was placed on the overview about the pharmacy services on *Umbrella* website. Finally, the link was put on *Umbrella*'s service locator for pharmacies. The service locator page helps people to identify the nearest pharmacy offering the *Umbrella* service. People can enter the postcode on the site and are shown the closest pharmacy.

The link to the pre-registration site was also posted on social media by *Umbrella*'s communications team as shown in Figure 8.

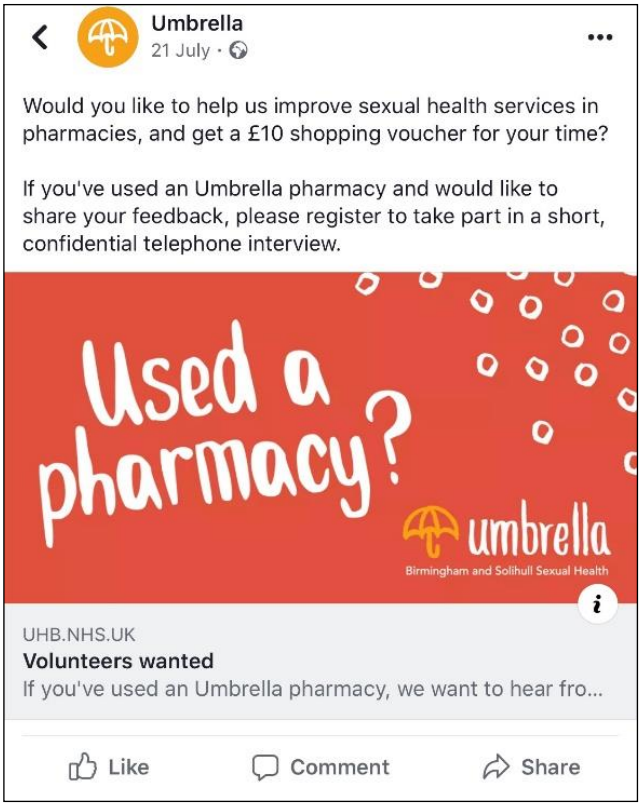

FIGURE 8 EXAMPLE: SOCIAL MEDIA POST ADVERTISING PRE-REGISTRATION SITE

7.6.5. Ethical concerns and approvals

Research has to be conducted in accordance with appropriate ethical standards (Pietilä et al., 2020). This section highlights the main ethical concerns for this study.

Informed consent

Informed consent means that potential study participants receive all relevant study information, understand the information, know what it means for them and voluntarily agree to participate (C. Grady, 2018). The way that informed consent is gained, is a major ethical issue (Miller & Bell, 2002). Providing sufficient time to consider participation is important as otherwise people might not be free in deciding whether they want to take part (Hallinan et al., 2016; Lynöe et al., 1991). Participants in this study were given at least 12 hours after the information sheet was provided to consider the information. The information sheets for pharmacy staff and pharmacy users are provided in Appendix 7.

There should be flexibility in how consent can be obtained, hence, both written and verbal consent can potentially be used (Bhupathi & Ravi, 2017). If consent is taken verbally, it may be audio recorded (Lahman, 2017). Since all interviews in this study were conducted on the phone, audio recorded verbal consent was obtained from all study participants. Participants were sent the consent form in advance for their information. A copy of the telephone consent form is provided in Appendix 8.

Withdrawal

Research protocols often state that potential research participants can withdraw at any time from a study (S. J. L. Edwards, 2005). For trials this usually means that participants want to discontinue their participation in the data collection process (participant withdrawal); however, sometimes participants also want their previously collected data to be removed (data withdrawal) (Ye et al., 2011). The current study consisted of one-off interviews and hence, participant withdrawal was not an issue; however, consideration for data withdrawal was given. Participants were given two weeks after the interview to request data withdrawal. Since the data would be anonymised, analysed and further synthesised for publication, an unlimited period of data withdrawal would not have been feasible. None of the participants requested data withdrawal.

Data storage

Secure storage of data is highly important (Ienca et al., 2018). The General Data Protection Regulation (GDPR) data privacy policy must be met in all European Union member countries, which currently (as of 2019) includes the UK (Conrad & Alghamdi, 2019).

Only encrypted digital voice recorders were used to audio record the interviews. All electronic data from this study was securely stored on the shared drive of the University of Warwick. All paper versions were securely stored in a key-protected locker in Julia Gauly's office. Only Julia Gauly had access to the keys. All data from the study will be stored for 10 years in accordance with the University's Records Retention Schedule.

When Julia Gauly leaves Warwick Medical School, all data in the form of paper versions will be safely stored at the data archive of Warwick Medical School. The electronic data will continue to be stored in a shared drive at the University of Warwick.

Remuneration

For this study, all study participants were provided with a shopping voucher worth £10 as an appreciation of their time. The availability of the voucher was planned to be put on all advertisement material as information for potential candidates. The ethics committee approved that vouchers could be provided to participants but initially declined the request to inform potential study participants about the voucher on advertising materials (e.g. flyers and social media posts). This decision was most likely made because some view the advertisement of the voucher as coercive and believe that it induces individuals to take part in research studies (Largent & Lynch, 2017; Polacsek et al., 2017). However, taking part in an interview is time consuming and expecting the public to give their time without letting them know that they will receive an reimbursement has been described as unreasonable by some researchers (Draper et al., 2009). As recruitment without advertising the voucher was slow, an amendment was submitted after two months of recruitment to the ethics committee asking for permission to advertise the voucher on the study material and this was approved.

Ethics committees have been found to lack policies informing their decision about payment (Largent et al., 2012), and more guidance about payment of participants needs to be provided to make decisions from ethic committees more consistent.

7.6.6. Approvals for this study

Ethical reviews are important to ensure that research meets ethical standards (Mooney-Somers & Olsen, 2017) and qualitative research involving humans must undergo ethics review and approval (Giacomini, Cook, & Group, 2000). This section outlines all approvals obtained for this study.

Research studies that take place in an NHS setting require NHS Ethical approval. There was some level of uncertainty whether NHS Ethical Approval would be required for the interview study: On the one hand, pharmacy staff are not NHS employees and pharmacy users not NHS patients as pharmacies are independent businesses and not NHS institutions. This would suggest that no NHS Ethical Application would be required. On the other hand, the pharmacy-based sexual and reproductive health services aimed to be explored through interviews with pharmacy staff and users were provided by *Umbrella*, which is part of an NHS organisation (the University Hospital Birmingham NHS Foundation Trust). On the grounds that the sexual and reproductive health services to be explored were provided in conjunction with an NHS Trust it was advised by the study sponsor, the University of Warwick, to apply for NHS Ethical approval.

Ethics applications to key research approval bodies can now be made through a single UK-wide Integrated Research Application System (IRAS) which is provided by the Health Research Authority and Care Research Wales. The UK Research Ethics Service is independently from the Health Research Authority (G. D. Taylor & Rogers, 2019). Approval from the Health Authority in addition to approval from the Research Ethics Services is required since the 16th April 2018 for all research that is based in the NHS in England and Wales.

Since all research carried out within the NHS requires a research sponsor in accordance with the UK Policy Framework for Health and Social Care Research (2017), sponsorship approval was obtained from the University of Warwick (Reference number: SC.40/17-18). Ethical approval was obtained from the South Central – Oxford B Research Committee (REC reference number: 18/SC/0511) and from the Health Research Authority (HRA). Although HRA approval covers approvals of NHS Trusts, internal approval from the project funder 'University Hospital Birmingham NHS Foundation' was required before the data collection and analysis could be started.

Only one substantial amendment was made to the NHS ethics application. The substantial amendment was made to get permission to advertise the voucher as outlined in a previous section (see section 7.6.5 'remuneration'). The amendment was approved by the Research Ethics committee and HRA. The amendment documents were forwarded to the University Hospital NHS Foundation Trust for their information.

An overview of all amendments is provided alongside a reason for the amendment in Appendix 9. The approval process took eight months, measured from the time that the sponsorship application was submitted to the final approval from the University Hospitals Birmingham NHS Foundation Trust. A timeline offering an overview about all processes described in this section is provided in Appendix 10.

7.7. Data collection

Before the interview process is explained, considerations regarding the mode of interviews are discussed.

7.7.1. Mode of interviews

There are many different modes of interviews. For a long time, face-to-face interviews have been the norm for data collection and been held to be the gold standard whereas telephone interviews have often been dismissed as not being well suited for qualitative interviewing (Irvine, 2018; Oltmann, 2016). It has to be acknowledged that face-to-face interviews have several advantages over telephone interviews: For example, face-to-face interviews take place in a controlled environment (Seale, 2004) whereas there is a risk with telephone interviews that participants may get distracted and that background noise creates a problem. Further, social cues such as body language can be observed in face-to-face interviews and provide extra information (Barratt, 2012), whereas social cues in telephone interviews are limited to the pauses and tone.

Nevertheless, telephone interviews have increased in popularity in the past thirty years (Oltmann, 2016) and there is increasing literature documenting the potential for telephone interviews to be a suitable method for conducting qualitative research (Drabble et al., 2016). Telephone interviews have also increased in importance during the COVID-19 pandemic (as of September 2020), where research methods which avoid face-to-face interactions with participants are needed. Telephone interviews are logistically convenient to conduct as both the interviewer and the participant do not have to travel (Rahman, 2015). This enables participants to be interviewed from a larger geographical area, reduces cost, increases interviewer safety and also provides greater flexibility to schedule interviews (Drabble et al., 2016). However, more importantly for this study, telephone interviews increase perceived anonymity and privacy, and have shown to be effective when interviewing participants on sensitive topics (Drabble et al., 2016). The anonymity of telephone interviews, where the interviewer is not physically present, may make participants more comfortable and encourage them to answer questions more truthfully (Musselwhite, Cuff, McGregor, & King, 2007).

Since some participants might prefer telephone interviews over face-to-face interviews due to a higher level of confidentiality (Greenfield, Midanik, & Rogers, 2000), it was decided that participants could choose whether they wanted to be interviewed via phone or in person. This gave participants the freedom to select the mode of interview that they were most comfortable with.

7.7.2. Topic Guide

A topic guide or interview guide outlines the key topics to be explored with participants and aids the researcher to ensure consistency in the data collection while also giving room to explore detail relevant to the individual participant. The wording of questions on the interview topic guide can be adapted to each participant. Topics are developed after the relevant literature has been reviewed and research questions defined (Ritchie et al., 2013). For this study, the topic guide was developed by the PhD candidate based on the findings of the systematic review conducted for this project (Gauly et al., 2019). It was also informed by experts in the field (including the Chair of the local pharmaceutical committee, the academic supervisors and *Umbrella* employees). Separate topic guides for pharmacists, pharmacy healthcare assistants and pharmacy users were produced and iteratively developed based on the notes taken during and after the interviews. Different topic guides were required for the following reasons:

Pharmacist and pharmacy healthcare assistants have different roles and responsibilities in the pharmacy. While pharmacists can deliver all of *Umbrella*'s services, pharmacy healthcare assistants are only allowed to provide condoms and STI self-sampling kits. Further, while pharmacists are often in the back of the pharmacy, pharmacy healthcare assistants are usually the first point of contact to pharmacy users and therefore may have different perspectives compared to pharmacists. Pharmacy users are receiving rather than providing services and therefore different questions needed to be asked.

The areas explored with pharmacy staff were as follows:

- Experience of delivering the service
- Views and experience of data collection when delivering sexual and reproductive health services
- Role of pharmacy healthcare assistants in sexual and reproductive health service delivery
- Views on how pharmacy-based sexual and reproductive health services can be further developed
- Role of training in the delivery of sexual and reproductive health services

The topic guide for pharmacy users covered the following areas:

- Reasons they visited the pharmacy rather than other sexual and reproductive health provider
- Experience of using the pharmacy for sexual and reproductive health services
- Experience of providing personal information in the pharmacy
- Views on how pharmacy-based sexual and reproductive health services could be further developed

Open ended questions were used as they allowed for the exploration of topics in-depth (Weller et al., 2018). Further, prompt questions associated with the main questions were included in the topic guide to aid the researcher in guiding the interview and to get more information. Copies of the topic guides are provided in Appendix 11.

7.7.3. Interview Process

An overview of the telephone interview process is provided in Figure 9. Consideration was given to the length of the interview. Up to one hour is considered as appropriate for semi-structured interviews. However, one hour should not be exceeded to avoid fatigue of both the interviewer and the participant (Newcomer, Hatry, & Wholey, 2015). The advertisement material stated that the interview would last a maximum of 60 minutes.

All interviews were conducted by Julia Gauly, a female researcher trained but without previous experience in qualitative interviewing. Julia Gauly's supervisor (H.A.) and another researcher from Warwick Medical School (J.P.) reviewed the first number of interview transcripts in order to provide Julia Gauly with advice and guidance on the conduct of further interviews.

At the beginning of the interview, Julia Gauly introduced herself, summarised the study information and gave the participant the opportunity to ask any questions. Next, oral consent was obtained. Following this, the semi-structured interview was conducted using the topic guide.

As the collection of study participants' demographics is important in order to interpret and draw conclusion from the results (Sifers et al., 2002), demographic information was then obtained from all study participants. In addition to the information collected on study participants prior to the interview (see section 7.4), the following demographic information was collected for each participant:

- Gender
- Ethnicity
- Age
- Religion

Previous research showed that participants' age, gender, and ethnicity is commonly reported in research studies (Sifers et al., 2002). In the context of sexual and reproductive health services, previous research suggests that demographic characteristics such as ethnicity (Marlow et al., 2009), age (Hussainy et al., 2011), gender (Hussainy et al., 2011) and religion (Cooper et al., 2008; Marlow et al., 2009; Mollen et al., 2008) may impact people's attitudes towards sexual and reproductive health services. Therefore, all participants were asked for this information. However, participants who preferred not to answer the questions on demographics and personal characteristics could still take part in the study.

Pharmacy staff were also asked for the following information:

- Number of years in pharmacy profession
- Number of years in role at current pharmacy

Numbers of years working as a pharmacist have also been collected in previous studies on pharmacy-based SRHS (Wong et al., 2017) and evidence suggests that it may impact health providers' attitudes towards SRHS (Ibrahim et al., 2013).

These three parts of the interview (obtaining consent; semi-structured interview; obtaining demographic information) were audio recorded. The interview participant was informed every time when the encrypted audio recorder was turned on and off. As sharing qualitative research findings with participants is considered an ethical correct procedure (Goldblatt et al., 2011), study participants were asked at the end of the phone call whether they wanted to be provided with a study report.

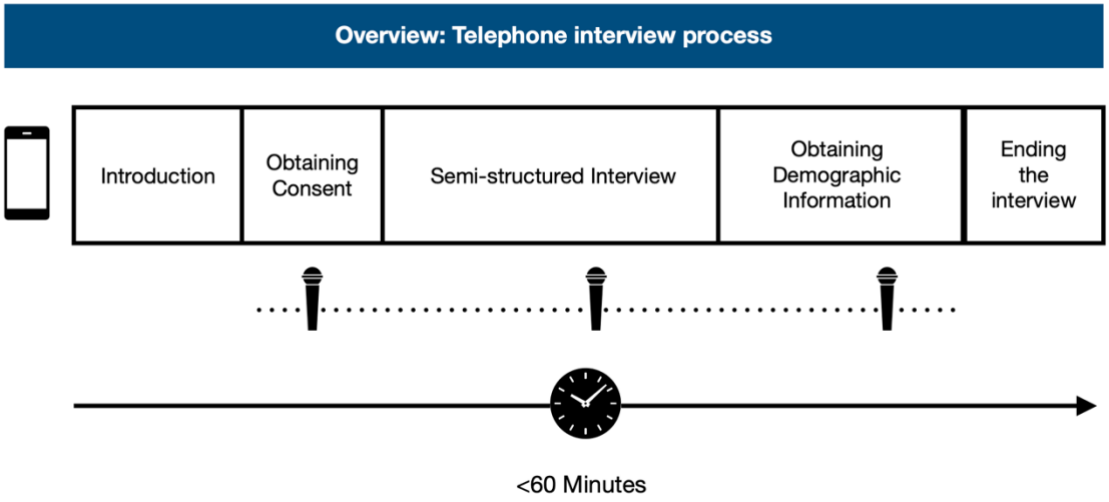

FIGURE 9 OVERVIEW OF TELEPHONE INTERVIEW PROCESS

7.8. Data transcription

As transcription work is a time-consuming part of qualitative research it was outsourced to an external transcription service. This is commonly done in qualitative research (Bokhove & Downey, 2018). All interviews were anonymised and then transcribed verbatim by Appen, a professional transcription service, approved by the University of Warwick. Verbatim transcripts are considered to be the best way to capture the meanings of interviews (Cohen et al., 2007). The turnaround of the transcription was about ten working days. Once received, each transcript was checked for accuracy against the recording and read several times for familiarisation with the data by the PhD candidate.

7.9. Data Analysis

A commonly applied qualitative method to analyse data in health sciences studies is thematic analysis (Nowell et al., 2017). It is an approach to extract the meaning and concepts from data by identifying, analysing and reporting patterns in data (Bennett et al., 2019; Braun & Clarke, 2006).

It is commonly used for several reasons. First of all, it is a highly flexible approach that fits most research questions (Cassell & Bishop, 2019). Further, no detailed theoretical knowledge is required. This means that thematic analysis can be learnt quickly, is straightforward (Herzog et al., 2019) and highly accessible, particularly for less experienced researchers (Braun & Clarke, 2006). More importantly, thematic analysis is particularly suitable for analysing experiences (Herzog et al., 2019) and can be used to explore datasets of all sizes (Herzog et al., 2019) and to compare similarities and differences between participants' experiences (King, 2004). Thematic analysis has also been found to be a flexible tool for exploratory research (Herzog et al., 2019).

Since exploring and comparing study participants' experiences was the main focus of the interview study, thematic analysis was deemed appropriate for the data analysis.

To be able to evaluate whether the method of data analysis is credible, the method has to be described in detail (Nowell et al., 2017). Thematic analysis has received criticism in the past as there was no procedural advice published (Terry et al., 2017). However, since Braun and Clarke published their six phases of thematic analysis (Braun & Clarke, 2006), it has become a popular and reputable method of analysis. Thematic analysis is an iterative process (Braun & Clarke, 2019) and was carried out in parallel to the interview data collection. This approach also was taken to determine the point at which no new themes were identified in the data.

For the analysis, the six phases of thematic analysis introduced by Braun and Clarke were followed (Braun & Clarke, 2006):

1. Familiarisation with the data
2. Generation of initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

As interviews were conducted, interview transcripts were read several times by J.G. for familiarisation and initial codes were noted down. All transcripts were also read by another researcher (H.A.). Then, all interview transcripts were uploaded into the software programme NVivo v12 and initial codes were created. The codes were then grouped into categories and coding frameworks created for each participant group (Pharmacy Users, Pharmacists, and Pharmacy Healthcare Assistants). This process was repeated on paper: All codes identified in NVivo were printed and manually sorted into categories to create a coding framework. To reduce bias and increase the validity and value of the thematic analysis, analysis was supported by other researchers: A researcher from Warwick Medical School (J.P.), who is experienced in qualitative research, coded 30% of all interviews and also created her own version of a coding framework. J.G. and J.P. then discussed the coding framework for each group and adapted them where needed to produce one final coding framework. Afterwards, themes were identified within and across the three different participant groups.

Mind maps were used to present the themes and subthemes. Different colours were used for the three different groups to ensure that it was visible which themes or subthemes resulted from which participant groups. The transcripts were also read by H.A. and the themes discussed, reviewed, defined and named in collaboration with H.A., J.R. and J.P. over time. Finally, the results were written up. Quotes were provided to substantiate analytic findings.

7.10. Interpretation of the Findings

As explained in section 2.6.4, NPT was used as a lens for interpreting the findings from the qualitative interview study. It is now described how NPT was applied:

In line with other qualitative studies which used NPT (McCrorie et al., 2019; Rostami et al., 2018), the results of the thematic analysis were mapped onto the four constructs of NPT: Coherence, Cognitive Participation, Collective Action and Reflexive Monitoring where applicable (see 2.6.4). Data was mapped only where the data fitted with a construct of Normalisation Process Theory.

As done in other studies, the PhD candidate (J.G.) used the NPT toolkit to support this process of identifying specific points of relevance (C. H. D. Jones et al., 2016; O'Donnell et al., 2017). The toolkit is available online and presents sixteen statements related to the four constructs of Normalisation Process Theory. By sliding a bar, you can indicate how strongly the statement is true for the complex intervention in question according to the study findings. Once all statements are completed, radar plots illustrate the strengths assigned for the four concepts overall and for each single concept of NPT. While the NPT toolkit is not a scientific instrument but a subjective assessment, it can help users of the NPT to evaluate the different factors contributing or inhibiting complex interventions to become part of routine practice. Hence, it can assist the interpretation of the qualitative results. The PhD candidate's interpretation of the findings of the NPT was discussed with the research team (H.A., J.R. and J.P.).

The findings of the interpretation using Normalisation Process Theory were adapted over time by J.G. and presented in text and a figure.

7.11. Chapter summary

This chapter presented the methods of the primary qualitative research study. It covered practical aspects such as recruitment, interview process and processing data, ethics and other approvals. It also covered factors that required decisions to be made on how the study would be conducted; eligibility criteria, sampling strategy, content of interviews and method of data analysis and interpretation were outlined. The following chapter 8 presents the findings and discussion of the interview study.

8. Interview Study Results and Discussion

8.1. Chapter overview

This chapter presents the results of the interview study, with accompanying interpretation and discussion of the findings. Firstly, an overview of participants' characteristics is described. Next, the themes and subthemes identified are presented and an interpretation of the results offered. In the discussion section, the main findings are reiterated, and the strengths and limitations presented, in relation to the approach, the setting, and the sample. Finally, the interview study findings are compared to the existing literature.

8.2. Interviews

In total, 15 pharmacy staff (nine pharmacists and six pharmacy healthcare assistants) and 15 pharmacy users took part in a telephone interview between April and September 2019.

8.2.1. Identification of interview participants

In the end, no pharmacy staff members were recruited through flyers, suggesting that this strategy is not well suited to recruit this participant group. Research has shown that people are more likely to participate in research when they are directly approached by researchers rather than when they have to approach the researcher to take part (Hewison & Haines, 2006). Pharmacy staff might have been hesitant to contact Julia Gauly using the details provided on the flyer.

However, the face to face recruitment of pharmacy staff proved to be effective. In total, 29 pharmacists expressed an interest in taking part and interviews were scheduled with 13 of these. Of these, four did not answer the phone at the scheduled time. One of these explained that he had decided not to take part due to time constraints, whilst the others did not offer any explanation. Hence, nine pharmacists were interviewed in the end. Further, eight pharmacy healthcare assistants who attended *Umbrella's* training registered their interest in the study and six interviews were scheduled. Since data saturation was reached after these fifteen pharmacy staff interviews, no further interviews were scheduled.

Two pharmacy users were recruited through the distribution of flyers and two pharmacy users expressed an interest in taking part as a result of social media promotion (one of these did not meet the study's inclusion criteria and the other one decided not to participate after being provided with the information sheet without giving a reason). In total, 196 pharmacy users registered their interest in taking part in an interview on the pre-registration site from *Umbrella* and 27 interviews were scheduled by the PhD candidate. Of these, two candidates cancelled the interview without giving a reason, five did not answer their phone at the scheduled time, one participant mistakenly thought it was a job interview, and four were found to be ineligible because they had used a sexual health clinic rather than a pharmacy. In total, 15 pharmacy users were interviewed, and data saturation was reached.

Emergency contraception pills can be purchased at a pharmacy or be provided for free through the *Umbrella* service to women between 13 and 60. One pharmacy user (age group: 25-29) interviewed was wrongly told by a pharmacy healthcare assistant that she had to pay to get the emergency contraceptive pill through *Umbrella*. The pharmacy healthcare assistant falsely stated that this was because she was not eligible for the free service due to her age. Technically, this pharmacy user had not used the *Umbrella* service because she was charged for the emergency contraceptive pill; however, since both the pharmacy healthcare assistant and the pharmacy user believed that the *Umbrella* service had been provided, her interview data was still included in the analysis. As this interview participant indicated that she would risk getting pregnant next time rather than having to pay for the emergency contraception pill, the incident was reported to *Umbrella*'s business manager who then raised the issue with the pharmacy.

8.2.2. Type of conducted interviews

All participants chose to take part in telephone interviews rather than a face-to-face interview.

On reflection, offering telephone interviews was crucial in conducting this study. Pharmacy staff were busy and difficult to get hold off, and they were not willing to travel for the interviews. Further, both staff and users were often interviewed outside working hours (early in the morning and late in the evening) and conducting interviews in person at these times would have been difficult. Both pharmacy staff and users often cancelled or rescheduled the interview last minute. If interviews would have taken place face-to-face, a lot of time would have been wasted for waiting or travelling unnecessarily.

Previous research has shown that it can take some time to build rapport when conducting telephone interviews (Irvine, 2018). When reflecting on these interviews, it can be said that it took time to build rapport with some participants, and pharmacy users in particular. Pharmacy users tended to give short answers at the start of the interview. However, after a few minutes study participants seemed to get more trusting and to open up and all data required to address the research questions were collected.

8.2.3. Interview lengths

Excluding obtaining consent and asking demographic questions, interviews lasted between 15 and 51 minutes (average: 29 minutes).

8.3. Description of sample

8.3.1. Pharmacy staff

An overview of pharmacy staff characteristics is provided in Table 14.

TABLE 14 PHARMACY STAFF - PARTICIPANT CHARACTERISTICS

Characteristic	Pharmacists	Pharmacy Healthcare Assistants
Total number, n	9	6
Gender		
Men	5	1
Women	4	5
Age		
<30	5	1
30-39	3	2
40-49	1	1
≥50	-	2
Ethnicity		
White/White British	1	4
Asian/Asian British	6	2
Black/Black British	2	-
Religion		
Christianity	-	2
Islam	5	1
Hinduism	1	-
Sikhism	2	-
No Religion	1	2
Type of *Umbrella* pharmacy employed at		
Tier 1	3	2
Tier 2	4	4
Tier 1 and Tier 2	2	-
Years in Profession		
<5	5	1
5-9	1	2
10-19	2	2
20-30	1	1
Years in current role		
<5	7	1
5-9	2	2
10-19	-	2
20-30	-	1

Pharmacists

Umbrella pharmacies operate either at 'Tier 1' or 'Tier 2' level. 'Tier 1' pharmacies offer emergency contraception and condoms. They can also dispense pre-ordered STI self-sampling kits for up to five different STIs. Further, these pharmacies have STI self-sampling kits in stock that can be used to test women presenting for emergency contraception for chlamydia and gonorrhoea. 'Tier 2' pharmacies offer an even larger range of services: they additionally provide oral contraception, contraceptive injection, and chlamydia treatment. They also have all types of STI self-sampling kits in stock and can offer them to pharmacy users.

Further, they can provide women presenting for emergency contraception with another pack of emergency contraception for future use (advance emergency contraception).

Out of the nine pharmacists interviewed, three worked at a 'Tier 1' and four at a 'Tier 2' pharmacy. Two locum pharmacists (pharmacists that are employed on a contractual basis through an agency), worked at both a 'Tier 1' and a 'Tier 2' pharmacy. All pharmacists interviewed worked at different pharmacy stores. In total, five out of nine pharmacists were male and four were female. Most pharmacists fell into the 25-29 age category (3/9), identified as Asian/Asian British (6/9) and stated that their religion was Islam (5/9). Most pharmacists had qualified as a pharmacist between 0-5 years ago (5/9) and had been in their current role for less than five years (6/9).

Pharmacy Healthcare Assistants

Out of six pharmacy healthcare assistants interviewed, four worked at 'Tier 2' pharmacies and two at 'Tier 1' pharmacies. The six healthcare assistants worked at three different pharmacy stores. Overall, five out of six pharmacy healthcare assistants were female. Out of the six, two fell into the 30-34 and two into the 50-54 age category. One pharmacy healthcare assistant was between 18 and 24 and one was between 35 and 39 years old. Most pharmacy healthcare assistants (4/6) identified as White/White British. Two pharmacy healthcare assistants indicated Christianity and one Islam as their religion. Two pharmacy healthcare assistants stated that they were not religious. Participants' experience as healthcare assistants and number of years in current role varied between one and twenty years. The pharmacy healthcare assistants recruited were working at three different pharmacies.

8.3.2. Pharmacy Users

An overview of pharmacy users' characteristics is provided in Table 15.

The large majority of pharmacy users were female (13/15); one of the females identified as a transgender woman. In total, 10 out of 15 participants fell into the 25-29 age group, 5 out of 15 participants identified as Mixed/Multiple ethnic group (5 /15), and 8 out of 15 participants stated that they were not religious.

Seven out of the 15 pharmacy users interviewed had used more than one *Umbrella* service in one visit (see Table 15). Six pharmacy users stated that it was their first time to visiting the pharmacy for an *Umbrella* service, whereas nine had previously used a pharmacy-based *Umbrella* service.

In total, at fourteen different *Umbrella* pharmacies had been visited by participants.

TABLE 15 PHARMACY USERS - PARTICIPANT CHARACTERISTICS

Characteristic	Pharmacy Users
Total number, n	15
Gender	
Men	2
Women	12
Transgender Women	1
Age	
18-24	3
25-29	10
30-34	2
Ethnicity	
White/White British	3
Asian/Asian British	4
Black/Black British	3
Mixed/Multiple Ethnic Group	5
Religion	
Christianity	3
Islam	8
Hinduism	2
Sikhism	1
No Religion	1
***Umbrella* services used**	
Chlamydia treatment and condoms	1
Oral contraceptive pill and emergency contraceptive pill	1
STI kit and condoms	1
Condoms and emergency contraceptive pill	1
STI kit and emergency contraceptive pill	2
Condoms only	1
Emergency contraceptive pill	4
Oral contraception	1
Contraceptive injection	1
Chlamydia treatment	1
Chlamydia treatment and oral contraceptive pill	1

8.4. Overview of themes and their subthemes

Four main themes and several subthemes were identified: 1. Pharmacy as a venue for sexual and reproductive health services (SRHS) (Need for physical privacy; need for trained staff; Convenience), 2. Staff-User interaction (Staff interpersonal skills; Sex of staff; Collection and use of personal information; Language and literacy), 3. Impact of delivering SRHS on pharmacy staff (Impact on Workload; Staff motivation to deliver services; Recognition for delivering services), 4. Implementing SRHS into pharmacies (Awareness of pharmacy services; Clinic support for pharmacies; Ease of use of STI self-sampling kits). An overview of all themes and their subthemes can be found in Figure 10.

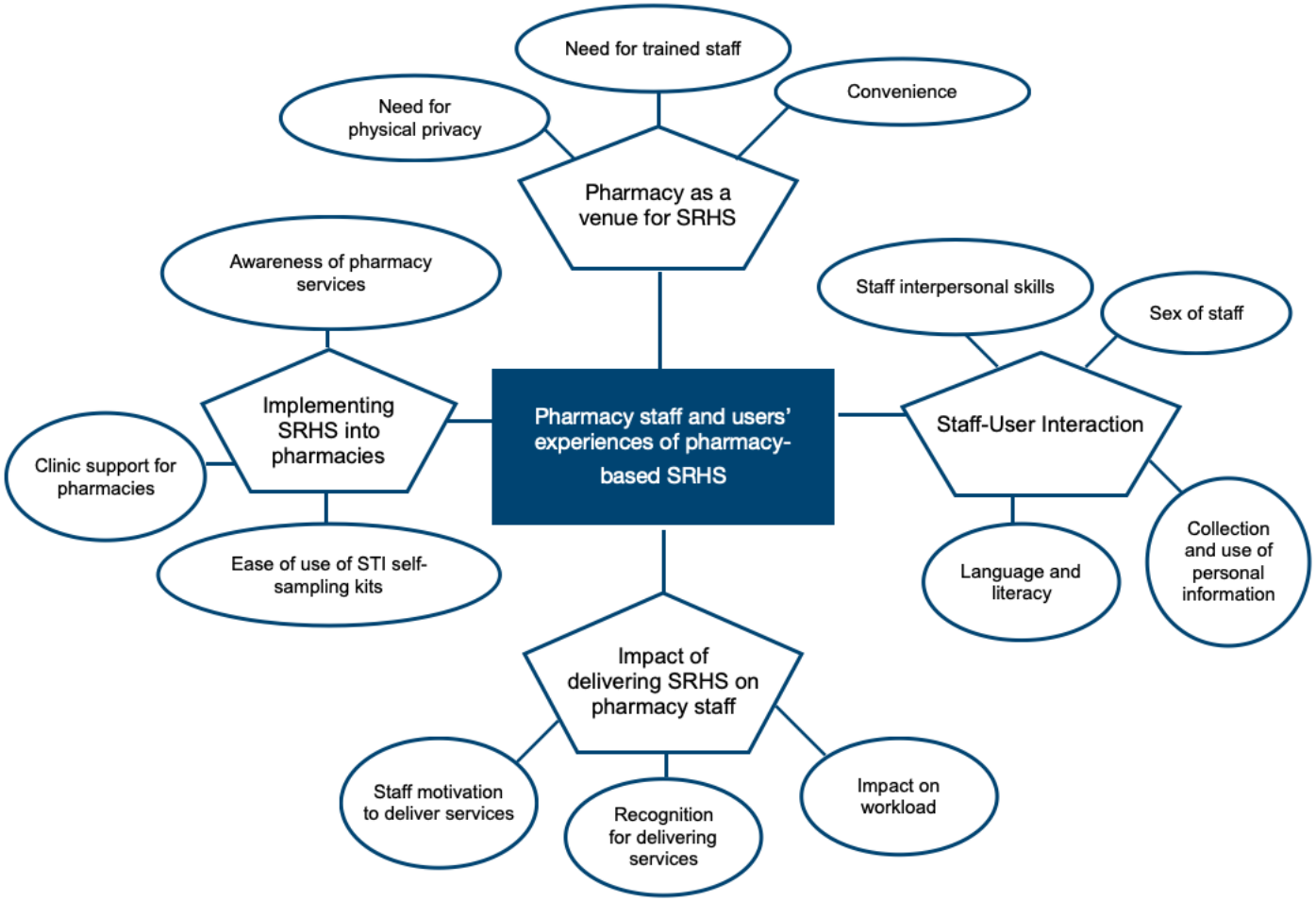

FIGURE 10 OVERVIEW OF ALL THEMES AND THEIR SUBTHEMES

8.4.1. Pharmacy as a venue for SRHS

This theme captures aspects that are related to the pharmacy as a venue for SRHS. These included: need for physical privacy; convenience; and need for trained staff.

Need for Physical Privacy

Physical privacy was highly important to users when requesting or being provided with a SRHS in the pharmacy. Physical privacy for pharmacy users meant that no one could hear or observe which service they were presenting for or being provided with and that they were not personally recognised by users and staff.

Stigma about using SRHS was identified as one reason for the high need of physical privacy by pharmacy users. For example, one pharmacy user stated she would use a separate pharmacy for sexual and reproductive health concerns as she feared that staff at her family pharmacy would judge her:

> *"So that's why I didn't choose to go in there, because it's more of a judgement element to be honest, because, because I'm waiting for so long for the coil to, you know, get that appointment ... readily available .... I had to go into that pharmacy three weeks for the same thing (emergency contraception). And that's not because I'm not, being careless, I'm using things, they're just not working." [Pharmacy user, female, age group: 25-29, ID number: 1082]*

However, users were not only concerned about getting judged by pharmacy staff but also by other people using the pharmacy. While some users felt embarrassed to request a SRHS in front of other people, others claimed not to care about other peoples' judgement:

> *"But there is definitely a feeling of judgement when you've got people that are stood behind you in the queue and whatnot and you're asking for the morning after pill. And you, you're sure that people are most likely judging you but for me it's kind of like, "Whatever." [Pharmacy user, female, age group: 25-29, ID:1049]*

Pharmacy users' experience of physical privacy widely differed and was depending on many different factors.

Pharmacy users who had requested a service while attending an emptier pharmacy tended to have a more positive experience of privacy than those attending a busy pharmacy.

When there were other people around, including staff and other pharmacy users, this negatively impacted pharmacy users' experience of privacy:

> *"I don't think there was enough privacy because, obviously, if you're at the counter and there are, like, customers coming in as well and there was, like, other apprentice workers and some of the staff was around so I don't think it was private enough." [Pharmacy user, female, age group: 25-29, ID:1092]*

Having people around was impacting privacy as people could overhear the conversation. Instead, when the store was empty, pharmacy users had a better experience of privacy:

> *"The store was empty, nobody was waiting there, nobody could have overheard." [Pharmacy user, female, age group 18-24, ID:1046]*

Some pharmacy users stated that they intentionally waited for the pharmacy to get empty before approaching pharmacy staff to request a SRHS as they did not want to be overheard:

> *"Sometimes when I go into my other pharmacy I do have to wait until people have gone out, 'cause you don't necessarily wanna be discussing that in front of other people, do you know what I mean? It's quite sensitive." [Pharmacy user, female, age group: 25-29]*

This behaviour where pharmacy users were waiting for the pharmacy to be empty or quieter before requesting a service, was observed by pharmacy healthcare assistants:

> *"If there's other people in the shop at the counter, they, they'll wait until there's nobody in there and then they'll come in." [Pharmacy healthcare assistant, female, age group: <50, ID number:593]*

In order not to be overheard when requesting a SRHS, some users stated that they tried to speak very quietly at the counter:

> *"I will usually just speak really quiet, like, I try to speak as quietly as possible. But then I do recognise that, like, sometimes there are, like, about six or seven other people in there. And then if someone's going to come up to you and say, "Oh, what are you after?" you are going to have to say as, like, discreetly as possible."[Pharmacy user, female, age group: 25-29, ID number: 1056]*

Whether pharmacy staff who were dealing with the service request were discreet or not further impacted how much privacy users experienced:

> *"I just spoke to her when she was stocking shelves and I did it quietly and she replied quite quietly as well so there wasn't, I don't think people around heard or anything."[Pharmacy user, female, age group: 25-29, ID number:1092]*

The queuing system in pharmacies also influenced pharmacy users' perception of physical privacy. One pharmacy user described that two parallel queues at the counter limited his feeling of privacy as people in the queue next to him could overhear him:

> *"Yeah, 'cause there was like, a queue behind, and there was .... like, two queues as well, so there was one to the left of me .... as well. And then, yeah, people walking past as well. It was, they, they were all right, just like I said, it was a bit embarrassing 'cause of the space." [Pharmacy user, male, age group: 18-24, ID number: 1062]*

However, the layout of the pharmacy could also enable privacy. One pharmacy user described that the SRHS counter was in a separate area of the pharmacy, which provided her with privacy:

> *"They have a side bit with like a, a, it's like a privacy counter, so if I wanted I could have went to that counter to speak to somebody. So no, even if it was busy, I know that I would have been speaking in confidence, I could have went to that counter."[Pharmacy user, female, age group: 18-24, ID number:1093]*

Those pharmacy users who did not want to be personally recognised, intentionally visited pharmacies at locations where they did not know the pharmacy staff and where they were unlikely to meet someone that they knew:

> *"That's probably one of the reasons as well why I did it closer to home, because I wouldn't ... I don't really know people living in my area .... as such. So I wouldn't have necessarily bumped into anybody in there." [Pharmacy user, female, age group: 30-34, ID number 1047]*

The delivery of SRHS occurred in most cases in private consultation rooms within pharmacies. Most pharmacy users felt that being in a consultation room provided them with sufficient privacy during the service delivery.

However, one pharmacy user stated that the consultation room in which she was delivered a service was not soundproof, limiting her perceived privacy:

> *"It wasn't soundproof ... 'cause I can hear people from outside. I could hear them, so I assumed people could hear me from inside as well whilst we were having conversation sometimes." [Pharmacy user, transgender woman, age group: 25-29, ID number:1023]*

Those pharmacy users who were provided with condoms or an STI self-sampling kit at the counter liked that the discreet packaging prevented other people from observing which services they were being provided with:

> *"The product, it's, it's not, what's the word, it's not, noticeable, you know. Only certain people would know, if they were to collect this, what it was, yeah... it's not labelled what it is. So it's in a, it's in a cardboard box and it's, you know, it's, there is privacy there." [Pharmacy user, female, age group, 30-34, ID number:1088]*

In summary, whilst steps were taken to address physical privacy during the service delivery, with the use of private consultation rooms, pharmacy users often felt that privacy was insufficiently addressed when requesting a service at a pharmacy counter. This was largely because of the nature of the pharmacy setting, and the physical layout of the pharmacy which made it possible to overhear what pharmacy users were requesting. The level of discreetness of pharmacy staff also impacted the level of privacy. Stigma was identified to be a key reason why privacy was important to pharmacy users.

Convenience

When asked why pharmacy users had chosen to access the pharmacy for a SRHS, convenience was the most commonly reported reason. By convenience pharmacy users meant that pharmacies were accessible from a practical point of view. For example, pharmacy users liked that they could easily reach a pharmacy from their home or work:

> *"Cause I get, I live down the road to that pharmacy ... so it's very convenient of me to go up there." [Pharmacy user, transgender woman, age group: 25-29, ID number: 1023]*

Further, people found pharmacies accessible due to their long opening hours allowing them to access pharmacies after work:

> *"So I was still able to go to work and whatever. And it was open to, it's open 'til late as well, 'til 7 pm. So that's pretty, that was pretty useful." [Pharmacy user, female, age group, 30-34, ID number:1047]*

Short waiting times and no need to make an appointment were also reported as factors contributing towards pharmacies' accessibility:

> *"I went back to the same pharmacy and saw a female pharmacist, because both times it was just, just really straight forward, you didn't need an appointment, was seen really, really quickly, and the staff were nice, and it was just way more, I suppose convenient." [Pharmacy user, female, age group, 18-24, ID number: 1027]*

In conclusion, pharmacy users collectively agreed that pharmacy-based SRHS are highly convenient to use.

Need for trained pharmacy staff

Pharmacies are offered free staff training by *Umbrella*'s education team. While *Umbrella* services have to be delivered by trained staff, it is up to the pharmacy whether to train all staff they employ.

Not having trained pharmacy staff in the pharmacy at all times was identified to be limiting the service availability. Pharmacy healthcare assistants stated that they often had to send people away as they did not have a trained pharmacist in the pharmacy. This was sometimes upsetting for pharmacy users who were desperately trying to access time sensitive services such as the emergency contraception pill:

> *"I was like, "I'm really sorry, but we haven't got a pharmacist who can do that service for you." And she got quite upset. You know, you know, she, she was, like, quite teary. And I'm like, you know, "If there was something I could do for you, I would." But she was ... I think she was like, you know, she just felt she needed it there and then." [Pharmacy Healthcare assistant, female, age group: 30-39, ID number: 497]*

Pharmacy healthcare assistants found it frustrating that they had to turn people away because a trained pharmacist was not available.

> *"So it just, it's frustrating we have to turn people away because we haven't got the right pharmacist in. [Pharmacy Healthcare assistant, female, age group: 30-39, ID number: 497]*

In summary, according to pharmacy healthcare assistants, not having trained staff available at all times was identified as negatively impacting the service availability.

8.4.2. Staff-User interaction

In this theme all aspects relating to the interaction between pharmacy staff and pharmacy users are discussed. These included the subthemes: sex of staff; staff interpersonal skills; collection and use of personal information; and language and literacy.

Sex of staff

While this was not true for all pharmacy users, many appeared to have a preference regarding the sex of the pharmacy staff delivering a SRHS to them. Several females expressed that they would feel more comfortable and prefer to be provided with a SRHS by female pharmacy staff.

> *"I think I just feel more comfortable and for the some of the reasons that I've gone and got the morning after pill in the past, probably seeing a man wouldn't make me happy. So yeah, no, I probably would just prefer a female." [Pharmacy user, female, age group: 25-29, ID number:1049]*

While some female pharmacy users stated that they would prefer female pharmacy staff but would still accept the service being delivered by a male member of staff, one pharmacy user expressed that she would probably not accept a male as provider of SRHS:

> *"I dunno, I don't think I'd just be, I don't think I'd be comfortable. If there wasn't a lady working there I probably wouldn't go to that place." [Pharmacy user, age group: 25-29, ID number: 1092]*

That many females preferred to talk to a woman was described by several pharmacy staff members. They stated that some women would specifically ask for a female pharmacist and, in some cases, would wait for a female pharmacist to deliver the service:

> *"Yeah, I, I mean, personal experience, really, just speaking to a lot of females, because normally when they'll come in and they'll say, "When is the female pharmacist …gonna be on?" Because, the, the pharmacy that I work in, me and the other pharmacist, we, we both offer the service, so he's there half the week and I'm there half the week. So sometimes they will come back when I'm there, just to feel a little more comfortable, but a lot of people obviously when they need it, it's very time sensitive, so obviously they will have to have the consultation with either a male or female. So it, it just depends on every situation." [Pharmacist, female, age group: <30, ID number: 47]*

Some pharmacy staff described strategies that they used to enable the delivery of services to those females who initially wanted to speak to a female pharmacist. For example, in some pharmacies, females were offered to be chaperoned by a female pharmacy healthcare assistant:

> *"But what, what we can do, we can have ... there's a, a lot of Healthcare Assistants there. So they can chaperone with the pharmacist. If they're happy to go with the pharmacist then they can be chaperoned." [Pharmacy healthcare assistant, male, age group: 40-49, ID number: 492]*

In other pharmacies, male pharmacists let pharmacy healthcare assistants convince female pharmacy healthcare assistants to receive the service by a male pharmacist:

> *"I might get my Dispenser to speak to them, just for her to say to them that, "This pharmacist is really friendly, is really approachable." So that's, that's another technique I try to use as well, to, kind of, help them open up a little bit and be a bit less nervous about it." [Pharmacist, male, age group: <30, ID number:24]*

While same sex delivery seemed to be preferred by many females, views on males' preferences regarding the sex of staff were mixed. Some pharmacy staff members felt that men were more comfortable talking to male pharmacy staff, while others felt they were more likely to approach female pharmacy staff:

> *"I feel that males are more comfortable speaking to a woman than they are to a man for some reason. Men don't really like speaking to men, do they? Yeah, I, I feel they're a bit more open when it comes to speaking to a woman." [Pharmacist, female, age group: 30-39, ID number: 71]*

One male pharmacy user interviewed indeed expressed that he preferred to be counselled by a female pharmacist because he was attracted to males:

> *"Cause I'm not attracted to females, if that makes sense? So it's like, a bit weird saying it to the gender I'm attracted to, if that makes sense?" [Pharmacy user, male, age group: 18-24, ID number: 1062]*

A pharmacist suggested that more information should be available for users to see whether a female or male pharmacist was working in a pharmacy.

> *"So where the, you've got the pharmacy opening times, it'd be nice, as well, maybe to have the main pharmacists, like, working in those pharmacies, whether they're male or female, and what times they would be available. So that might be an idea." [Pharmacist, male, age group: <30, ID number:24]*

This idea was supported by pharmacy users.

In conclusion, many users had a preference regarding the sex of pharmacy staff and for some, not having the staff of the preferred sex created a barrier for pharmacy users. Staff tried to use different strategies to overcome these barriers. While same sex service delivery seemed to be important to many, preferences were not straightforward and could not be presumed. In one case, the preference appeared to be linked to the pharmacy users' sexuality.

Staff Interpersonal skills

Pharmacy users' experience at the pharmacy was highly dependent on pharmacy staff interpersonal skills. The large majority of pharmacy users had a positive interaction with pharmacy staff whom they often described as friendly and sensitive.

However, where pharmacy staff were not confident when delivering the service, this impacted on the pharmacy user, making them less comfortable:

> *"To be honest with you, the guy that was there, he seemed a bit ... like he kind of didn't know what he was doing. (…) He was really stuck, really, he wasn't ... I didn't, I didn't feel confident with him if I'm, if I'm honest with you." [Pharmacy user, female, age group:25-29, ID number: 1082]*

Pharmacy staff members were aware of the importance of being confident in delivering the services. While some pharmacy staff members found that the training provided them with confidence, some said that more training and roleplaying would have helped them to be more confident in delivering services:

> *"I think we could have done with a little bit more training and probably a bit more roleplaying. And just to, yeah, I think they could have done with a little bit more training, just so that you are more confident in providing every service." [Pharmacist, female, age group: <30, ID number:96]*

Further, it was important to users that pharmacy staff did not judge them, and most pharmacy users described staff as non-judgemental and friendly:

> *"They can give appropriate information for a variety of things. And the fact that they are so professional so it's not, you don't feel like it's a personal, like, you know, like you're being judged when you're in there. It's just very like, professional in that they help and they're very friendly, which is really nice." [Pharmacy user, female, age group: 25-29, ID number:1056]*

However, two pharmacy users experienced stigma from pharmacy staff. One woman who had attended the pharmacy for chlamydia treatment was very upset by how she was treated by staff:

> *"They were just, like, "This is what we've got, take it, if it works it work ... works, if it doesn't just come back," But very abrupt and one of the healthcare workers said to me before, because I had an infection and then I'd, I'd had intercourse again and then there was a, there was a slip-up with the condom and then I had to go back.*

> *And he's, and then, at the end of him seeing me, he said, "I don't want to see you back here again. And that, that was a few years ago, but it always has stuck with me .... because that was really upsetting." [Pharmacy user, female, age group: 18-24, ID number: 1017]*

The other pharmacy user was a transgender woman who felt judged and discriminated by staff:

> *"And I think to myself, "Is it because I'm transgender?" And she was an Asian woman wearing a hijab, so I'm just thinking to myself, "Are you working in the right place? 'Cause you shouldn't be in the sexual health care if you're gonna be upset about transgender people coming here." And she was very, quite, she was acting a bit funny as well. And that's the thing, like, I don't think, again, and that's another thing, nobody should be discriminatory, especially the NHS, 'cause there's all sorts of people that are walking in there." [Pharmacy user, transgender woman, age group: 25-29, ID number:1023]*

This pharmacy user suggested that *Umbrella* staff should have training on diversity, including training on the appropriate usage of pronouns when communicating to transgender people.

Generally, the more respectful pharmacy staff were perceived to be towards users' choices, the better was their experience:

> *"And he asked me about a long term contraceptive option, went through those options with me. But I made him aware that, like, I, I have, like, a health condition. So before I made any decisions about going onto a long-term contraception I have to consult my, well I have to speak with my consultant to, because hormones can affect the condition and he was just very respectful of that." [Pharmacy user, female, age group: 25-29, ID number:1056]*

Conversely, where pharmacy users felt they pushed into using a service, they were more likely to feel uncomfortable:

> *"I can't remember, but it was just, I just remember it being uncomfortable and awkward and thinking, "Oh god, I just wanna get out of here. This is just ..." It's more just based on the questions that are like, like, demanding, like, I felt like I was being pressured into getting the coil and I didn't, I didn't want that." [Pharmacy user, female, age group: 25-29, ID number: 1082]*

Bad experiences with pharmacy staff were not found to be associated with pharmacy users' ethnicity or age.

In summary, pharmacy users largely had a positive experience with pharmacy staff. Being respectful of users' choices, non-judgemental and confident were associated with a positive experience. However, where pharmacy users felt that pharmacy staff were not confident, judgemental or not respectful of users' choices this was negatively perceived by pharmacy users.

Collection and use of personal information

For all *Umbrella* services, personal details (e.g. name, gender, ethnicity) and information (e.g. sexual history) is collected on service users. However, the services are confidential meaning that the data is only shared in cases where *Umbrella* is legally required to, for example where concerns about safety exist. Under 18-year olds are posed safeguarding questions, aiming to protect young people from harm.

Experiences on having to provide personal information differed widely between pharmacy users. Some felt that all information collected was relevant:

> *"He was really informative and he asked me a lot of questions that I felt were relevant in providing me with the, the right service." [Pharmacy user, female, age group: 18-24, ID number:1090]*

However, other pharmacy users felt uncomfortable with having to provide personal information for privacy reasons:

> *"I just felt uncomfortable to be honest .... that's just me personally. I like to be a private person." [Pharmacy user, female, age group: 25-29]*

While some pharmacy users were more willing to provide their details when pharmacists reassured them at the start of the consultation that the service was confidential, others, and particularly young people, remained reluctant and appeared to be put off by the questions:

> *"Sometimes you can see the youngsters, they don't, they don't really want to provide that information. They're a bit like, you know, if you reassure them, you know, you reassure them two or three times, or a bit, a bit more, you know, you say it doesn't go anywhere, it only goes to Umbrella. And, you know, you are, it, you know, just for your safety, just, you know, when you, you can, you try to explain it in as much as you can. But they're a bit reluctant to say why, and so that, that puts them off." [Pharmacist, female, age group:30-39, ID number:71]*

According to pharmacy staff, some pharmacy users chose to buy emergency contraception rather than to use the free *Umbrella* service, as they did not want to provide their personal information, indicating how important data privacy was for some users:

> *I've actually had patients who won't go for the Umbrella service, just because of that, and they'd ...prefer to buy it ... just ... Yeah, yeah, I've actually had customers, not many, but there are a few customers that, even after we reassure them that all this information is confidential, just don't like the idea of giving their names and date of births."[Pharmacist, male, age group: <30, ID number:24]*

Currently pharmacy staff are obliged to collect the name, postcode and date of birth of *Umbrella*'s service users. However, pharmacy users can give an alias if they don't want to provide their real name. Users are also asked additional questions but can opt to indicate "Prefer not to say". Pharmacists were aware that data privacy was a concern for many pharmacy users, and some felt that the data collected should be anonymised as much as possible:

> *"So, obviously, as long as we, I think, again, with the anonymising as much as we can, kind of, just taking the initials, for example; don't have to take their full names and surname."[Pharmacist, male, age group:<30, ID number:24]*

Some pharmacists expressed that they were already not asking users for their name and address:

> *"I never take a patient's name and address." [Pharmacist, male, age group:20-49, ID number 84]*

However, as outlined above, not asking for pharmacy users' name is against the policy (although users can provide an alias instead of their real name if they prefer). Some pharmacists believed that users did not want anyone else to have access to the data:

> *"So, again, I would be more comfortable if their, kind of, names were anonymised. And then, just because it will, I feel like for the customer and the patient, they wouldn't want anybody else, other than the pharmacist, accessing that, that kind of data." [Pharmacist, male, age group:<30, ID number:24]*

However, some pharmacy users expected that the data was shared amongst *Umbrella* pharmacies and clinics and were uncomfortable of being asked the same questions that they had already provided elsewhere. These users felt it would be better if the data was shared with other *Umbrella* providers:

> *"If they, if it was like, the clinic could share the information with the pharmacy it felt like it wouldn't be necessary, if that makes sense? You know, like, the database you keep all the information on? Like, if the pharmacy had access to that as well, it's just your name, date of birth and address, if that makes sense?*

> *It would be less, well, anxious…..if that makes sense? [Pharmacy user, male, age group: 18-24, ID number:1062]*

In summary, data privacy was a concern and for some pharmacy users, even a barrier to accessing *Umbrella*'s pharmacy services. This was despite attempts by pharmacy staff to convince users of the confidentiality of the services. Pharmacy staff felt that the data collection should be anonymised as much as possible. While staff believed that data should not be shared amongst different health providers as this might make users uncomfortable, some users were expecting that pharmacists had access to their health records and were surprised when they had to provide their data again.

Language and literacy

Several pharmacists expressed that they sometimes experienced difficulties in delivering services to people who were not native English speakers:

> *"There can sometimes be barriers, for example language barriers, if I cannot understand what somebody's saying, I cannot actually provide a service so I have signposted them back to the doctors or, you know, to a clinic where I can, somebody can, you know, get maybe an interpreter or something like that. I have had a few incidents of that, as well." [Pharmacist, female, age group: <30, ID number:47]*

While pharmacists tried to use *Google Translate* and *Google Images* to communicate the services to users, they sometimes needed to refer people on to the sexual health clinic (Whittall Street Clinic) in Birmingham when communication was difficult:

> *"Cause sometimes when they're a bit, have a bit of broken English it's a bit harder, and that's when I maybe refer them to Whittall Street, or something like that. But I try and use Google Translate as much as I could, I can." [Pharmacist, female, age group: 30-39, ID number:71]*

Some pharmacy staff suggested that having information leaflets in different language might be beneficial to overcome language barriers:

> *"Maybe if there were those questions written in different languages, like Polish for example, or Punjabi for example, so it's just easier for them." [Pharmacist, female, age group: 30-39, ID number:71]*

However, some pharmacy staff found that some users were illiterate and in these cases information leaflets were not helpful at all:

> *"So some, I would find that even though I am giving them the information leaflet, a lot of them say, "Well we can't read so you might as well just put it in the bin."*

> *So, okay, or you know, if they can't read or write, so in that sense providing them in different languages again wouldn't help them because they wouldn't understand." [Pharmacist, female, age group: <30, ID number:6]*

In summary, pharmacy staff felt that language barriers and illiteracy were sometimes an issue and, in some cases, even a barrier to pharmacy-based services.

8.4.3. Implementing sexual and reproductive health services into pharmacies

Several aspects were identified as important regarding the implementation of SRHS into the pharmacies. These were as follows: awareness of pharmacy services; support through clinics; and ease of use of STI self-sampling kits.

Awareness of pharmacy services

Participants felt that lack of awareness of the range of services offered by *Umbrella* pharmacies was a barrier to service usage:

> *"I, I guess, I think some of the services a lot of patients will know about, so the free condom distribution. But even then I think sometimes people might think that it's only for younger people whereas it's actually for everyone. So I think that might be one of, one barrier, potentially, to do with, kind of, the awareness of the Umbrella scheme because, obviously, we do promote it in the pharmacy but I think maybe sometimes people ... a, a lot of the time people don't know about the initiation of contraceptives in the pharmacy, so will be really aware of the free condom distribution and the STI self-sampling kits that you can get online but they won't be as aware as, say, the initiation of the STI self-sampling kits. A lot of patients are often surprised when we offer them that service or sometimes if it's the initiation of the contraceptives." [Pharmacy healthcare assistant, female, age group: <30, ID number:566]*

Particularly, pharmacy staff from smaller pharmacies felt that people were not aware that they were offering *Umbrella's* services:

> *"But I just, I don't know, sometimes I think we get overlooked 'cause we're such a small pharmacy I think sometimes people think, "Oh, no, we won't go there, they probably won't have it," or, you know, it would be nice to be sort of put on the map for, for, you know, for everyone." [Pharmacy healthcare assistant, female, age group: 30-39, ID number:302]*

Both pharmacy staff and users felt that more advertisement could lead to more people accessing the services:

> *"So the main thing I just, it needs better promotion, I think, and awareness. That's the main thing we need, because at the moment, it's just going by word of mouth, mainly." [Pharmacist, male, age group: <30, ID number:24]*

Even when interviewing pharmacy users who had already used an *Umbrella* service, it became clear that they were not really sure which services *Umbrella* were offering, where they were offering them, and who could access the services.

Uncertainty of pharmacy users on who can access the services was found in interviews with both staff and users. For example, pharmacy staff stated that men often accessed the pharmacy to get emergency contraception for their female partners although hormonal contraception can only be provided to females in *Umbrella* pharmacies.

> *"No, it's, it's generally, the, the only difficulty we have is we've noticed with Asian and, well, I don't even know if the others, they were kind of Romanian, I, I don't know, 'cause I've never .... asked them, but they come in to get the morning after pill for their women, but obviously we can't do that." [Pharmacy healthcare assistant, female, age group: <50, ID number 593]*

Pharmacy staff felt that they did not clearly advertise that only females could access hormonal contraception:

> *"That isn't clear, that isn't stated, no. I mean I, we've got posters everywhere and information, and it doesn't actually say anywhere. I mean, if it does, it's in the tiniest writing. So it advertises what we do, but it doesn't sort of say, no, so that isn't made clear, no." [Pharmacy healthcare assistant, female, age group: <50, ID number:593]*

One pharmacy user who attended an *Umbrella* service for emergency contraception was wrongly charged for the service by a pharmacy healthcare assistant who believed that *Umbrella's* services could only offer free emergency contraception to women within a certain age range. This indicates that pharmacy staff also were not clear about the eligibility criteria for the *Umbrella* service.

> *"I think, I can't really clearly remember but I think the lady said that the, the Umbrella service is only for people from 16 to 21 or something, so she said an age group definitely. Then I wasn't in that age group, I was older than that 'cause I'm, I'm 27 now and I think I went, when I went I was, like, 26. Yeah, so she said it's only for people that are 16 to 21,*

> *something like that." [Pharmacy user, female, age group: 25-29, ID number:1092]*

Further, pharmacy users described difficulties when trying to find out whether a certain *Umbrella* pharmacy was providing the service that they were interested in. Some users reported that it was difficult to find out on *Umbrella's* website which pharmacies offered which services.

They also stated that they had difficulties reaching the pharmacies by phone and finding a pharmacy that had a trained pharmacist and offered the service:

> *"When I looked on the website it listed the, the ones that did have the Umbrella service, or that they offered the Umbrella, so I literally rang, rang them all, 'cause it was on a, I think it was like Sunday morning at like ten o'clock or something, like, so I had to wait for opening times. But either they didn't answer or some of them said, "Oh no," they, like, they have to have a particular pharmacist or something." [Pharmacy user, female, age group: 18-24, ID number:1027]*

Outdated information on the website also negatively impacted pharmacies' accessibility:

> *"Yes, because some of the pharmacies that are listed on the website, it's quite dated, so I gave a few a call and they said they no longer supply that, the Umbrella services, but those websites are still ... those pharmacies are still on the website."[Pharmacy user, female, age group: 18-24, ID number 1017]*

That pharmacy users were calling in advance to make sure that there was a trained pharmacist available was noted by many pharmacy staff:

> *"No, it's just that usually we'd get a phone call beforehand and they'd ask you if you're … able to provide it and they've already tried maybe another pharmacy and they're coming from a, a distance, so they want to make sure that the pharmacist is actually available to provide the service." [Pharmacist, female, age group: <30, ID number 47]*

In summary, pharmacy staff and users felt that people were not aware of the range of services available due to a perceived lack of advertising. There was also confusion about who can access a service amongst both users and staff, creating a barrier to service in some cases. Finally, the available information (such as on the *Umbrella* website) was found to be incomplete and outdated by some users.

Clinic support for pharmacies

Pharmacy staff sometimes found themselves in difficult situations, such as pharmacy users repeatedly requesting services:

> *"I've had women come to me saying that they've had sexual intercourse probably every single day for the past month and not had any regular contraception and they're not too sure whether they could be pregnant but they don't think they are.*
>
> *I've had people had come in every day asking me for emergency contraception when I've just supplied it the day before or the day prior to that, which again makes me feel a little bit uncomfortable. And then I've had patients who I know that are drug addicts coming in asking me for the morning after pill, which again makes me feel a little bit uncomfortable." [Pharmacist, female, age group: <30, ID number 6]*

When unsure how to respond to a pharmacy user's request, pharmacy staff used *Umbrella's* Clinical Advice Line. While pharmacy staff appreciated that the Clinical Advice Line was available, some pharmacy staff experienced difficulties to getting through to the support team:

> *"And another thing as well, have more people at the Clinical Help Desk as well, because I know from, I haven't had to call the Clinical Help Desk, but I know from colleagues that have rang, sometimes it's really difficult to get through to the Clinical Help Desk. And, especially on weekends, it can be really, really difficult to get through as well, and especially when you're not sure what to do in this situation, you need some guidance and the customer's waiting as well, it can be really, really frustrating. So that might be something else as well." [Pharmacist, male, age group: <30, ID number 24]*

Furthermore, staff stated *Umbrella's* support team could not always help and it was then up to pharmacy staff judgement to decide what to do; which was experienced as difficult for some pharmacists. While pharmacists felt that they were generally well trained, they were aware that they could not help every person presenting for a sexual and reproductive health concern. More complex clinical cases or pharmacy users presenting with STI symptoms needed to be referred:

> *"But when, when it comes to sexual health, the private part, I think that's when we tend to go, "We're not trained to look at this, so you need to go to get some specialist help. Go to your doctor or go to a clinic." [Pharmacist, female, age group: <30, ID number:6]*

At one sexual health clinic (Whittall Street Clinic) in Birmingham, pharmacy staff can schedule copper coil appointments for those women presenting to prevent unwanted pregnancy after unprotected intercourse. However, pharmacy staff stated that there were not sufficient appointments available for copper coil fittings and if they were available the appointment times were not always convenient for pharmacy users:

> *"That's, 'cause when, we had one, for example, on, for example, on doing an STI initiation one on trying to provide someone with a STI kit, and one of the, when they answer one of the questions and they mention they have symptoms, it says, "It's best for them to see someone at the Umbrella clinic straight away."*
>
> *So then I've gotta go on the computer and try and get them an appointment, and it's so difficult to ... find them an appointment, to the point where I'll be weeks away. So that's another difficulty I face as well, just trying to get them an appointment at one of the Umbrella clinics." [Pharmacist, male, age group: <30, ID number: 24]*

Not having sufficient or convenient clinical appointments for pharmacy users created a barrier to service delivery in some cases.

Pharmacists also commented on the appointment process and felt that it would be more practical if they could access the appointment system directly rather than having to call the clinic to schedule an appointment every time:

> *"I think maybe more appointments, or some kind of system where we can add an, add an appointment on, or something like that." [Pharmacist, female, age group: 30-39, ID number: 71]*

In summary, pharmacists felt that they did not get sufficient clinical support. They found that the clinical advice line was not always available and that a lack of clinical appointments created a barrier for women presenting for the copper coil.

Ease of use of STI self-sampling kits

Pharmacy users were satisfied with most *Umbrella* services.

However, many pharmacy users expressed difficulties in conducting the blood test for the STI self-sampling kits:

> *"To be honest, it's just that I really found it hard to fill the tube up. So my blood stopped after just a couple of pushes. I had to use, like, all the pricks." [Pharmacy user, female, age group: 18-24, ID number: 1093]*

Some people who were given a STI self-sampling kit in the pharmacy did not end up completing the samples because they felt they could not do it:

> *"The blood thing in the home testing, you have to, like, prick your finger then squeeze it to get the blood out …. and I just can't do it." [Pharmacy user, female, age group: 25-29, ID number: 1049]*

Some users felt that not sufficient lancets were provided in the STI self-sampling kit:

> *"It's awful, they don't put enough ... is it ... not lanyards (?) ... they don't put enough of the ... oh, what are those things called that you prick the finger with? They, they put three in there ... that's not enough." [Pharmacy user, female, age group: 18-24, ID number 1017]*

Due to these difficulties, several users stated that they preferred having the STI testing done by a healthcare professional in a clinic.

Other than the blood test, one dyslexic pharmacy user stated having problems with the instructions for the STI self-sampling kit, and felt that clearer instructions and labelling would make the STI self-sampling kit easier to use:

> *"There's text in it…so with me I confuse which is which, because I don't understand what I'm doing. And I don't know which one I'm doing where, and what I'm doing which, though. If they specified that a little bit more better, then I might be able to continue using that service." [Pharmacy user, transgender woman, age group: 25-29, ID number: 1023]*

Pharmacy staff were aware that users had difficulties with the blood test and felt that they could assist pharmacy users with it:

> *"But when it comes to, like, swabs and finger prick tests and that kind of thing, that's traditionally only done by kind of a healthcare professional. So I think they don't want to take that on themselves, they want someone else to do that for them. Which I think a pharmacist is ideally placed to do so." [Pharmacist, female, age group: <30, ID number: 6]*

This idea was supported by pharmacy users.

> *"Yeah, if, I think if you could train a pharmacist to give blood tests and then they'd do it then it would be fine." [Pharmacy user, female, age group: 25-29, ID number 1049]*

In summary, the blood test which is part of the STI self-sampling kits was found to be not feasible by many pharmacy users. Pharmacy staff and users felt that pharmacy staff could support pharmacy users with taking the blood sample in the pharmacy.

8.4.4. Impact of delivering SRHS on pharmacy staff

Three subthemes relating to the impact of delivering SRHS on pharmacy staff were identified: Impact on workload, staff motivation to deliver services and recognition for delivering services.

Impact on workload

There was consensus amongst pharmacy staff that the consultation and recording of *Umbrella*'s services added workload. Some, but not all pharmacists, expressed that high workload was a burden and stressful.

Linking back to the section 'Collection and use of personal information', some pharmacy staff members felt that the consultation was lengthy due to the data that had to be collected on pharmacy users. One pharmacist felt that one solution would be for pharmacy users to pre-register themselves, which would not only speed up the consultation but also allow staff to use the consultation time to identify pharmacy users' needs:

> *"And so if it could speed up the process of having them pre-registered on the system then that would cut the consultation down in half. And then I could spend longer then actually, like I said, identifying maybe the patient's unknown needs rather than just the immediate concern." [Pharmacist, male, age group: 30-39, ID number: 86]*

One pharmacist also negatively commented on the complexity of the data collection on STI self-sampling kits.

> *"The, the STI kits are ... going on the Umbrella website, logging in doing this, doing that, it's such a longwinded process. I think, I think in that way I think that could be made a lot less complex than what it is. I mean I generally struggle because it's just such a longwinded process and I think there's no need for this."[Pharmacist, female, age group: <30, ID number: 6]*

Several pharmacists also felt that it took too much time to provide users with condoms:

> *"It takes five or ten minutes just to get condoms .... because we're asking for your name, your date of birth, where you live, whether you're allergic to latex ... did you put the leaflet in the bag? Did you offer them this advice? It's, it's, it's a bit much."[Pharmacist, male, age group: 30-39, ID number:86]*

Pharmacy healthcare assistants can provide condoms and STI self-sampling kits to pharmacy users. As part of the service delivery they have to collect information on the pharmacy user using paper forms. Pharmacists are then required to enter the data collected by pharmacy healthcare assistants onto the web-based system *PharmOutcomes*®. Pharmacy staff described that having to enter the data collected by pharmacy healthcare assistants on *PharmOutcomes*® duplicated work and pharmacists stated that they sometimes needed to stay late in the pharmacy to complete this task:

> *"I do feel the time pressure, yeah, yeah. And sometimes also you'd obviously have to stay late, then, won't you, to enter in the data and things like that, which I don't mind. It's fine, but I think sometimes it can be an issue." [Pharmacist, female, age group: 30-39, ID number 71]*

These pharmacists felt it would be more effective if pharmacy healthcare assistants could enter their data on the system themselves and pharmacists only had to check and sign off their data entries:

> *"I think that'll be a lot easier. That will save a lot of time for us as well." [Pharmacist, male, age group: <30, ID number: 24]*

Pharmacy healthcare assistants were also supportive of this idea:

> *"As long as the pharmacist has seen that, I don't see no problem whatsoever with us putting that data in." [Pharmacy healthcare assistant, female, age group: >50, ID number: 567]*

In some pharmacies pharmacy healthcare assistants already entered data on the web-based system *PharmOutcomes*®, although they were not supposed to do this, to take pressure off the pharmacist:

> *"I mean, like we used to, to be honest. We, we used to, when the pharmacist was in ... we would just say, "Oh," you know, "we've done this service. Can we put it on PharmOutcomes?" The pharmacist would be, "Yes," you know. "Yeah, that's fine. Just go in and put it on." But again, I asked the question on the training. And then I can't remember what her name was, but she said, "It's probably best for the pharmacist to do it, 'cause it is under their registration number." [Pharmacy healthcare assistant, female, age group: 30-39, ID number: 497]*

Some pharmacists stated that they faced time pressure. This was because the *Umbrella* service was only one of the jobs that they needed to manage:

> *"The only thing is sometimes it can be a little bit difficult with the time constraints, because obviously, you know, if we've got ten different people waiting for prescriptions or consultations or you know, whatever, it can be a little bit difficult timewise." [Pharmacist, female, age group: 30-39, ID number: 71]*

Pharmacists described that they often had to multitask to complete all their different jobs:

> *"But again like same thing, when, if I'm in a Tier 2 pharmacy and they want an STI kit and then I get them to fill out the questions. But obviously that's all confidential, I don't need to see that, so while they're filling out the questions for their free STI kit they should be eligible for, that's when again I just pop out. So I just do my best really to try and multitask."[Pharmacist, male, age group: 40-49, ID number: 84]*

Pharmacy users negatively commented on pharmacists multitasking during consultations, as they did not have the pharmacists' full attention.

> *"I'm there and then the phone goes, obviously he answers the phone. And then someone comes in 'cause they need a prescription, then he sorts that out, and I, I was just there for ages. And I was just thinking, "So, can you just sort me out because I would really like to go back to my child." [Pharmacy user, female, age group: 25-29, ID number: 1082]*

Pharmacy staff felt that workload was sometimes an issue because of low levels of staff:

> *"Especially if you're short staffed, for example, and a lot of people need your attention at the same time. Yeah, so that, that would be the, one of the most difficult things." [Pharmacist, male, age group: <30, ID number: 31]*

Pharmacists described that it was problematic if there was only one pharmacy healthcare assistant and one pharmacist in the store when someone presented for an *Umbrella* service:

> *"I think staffing is definitely an issue because if there's not much staff, I mean, for example, like, if it's just me and a counter staff and there's somebody coming for Umbrella, that means that I will have to obviously leave the main area of the pharmacy and be in the consultation room. So that's not always practical when there's more customers coming in, all that kind of thing, so I guess, yeah, staffing issues are definitely one." [Pharmacist, female, age group: <30, ID number: 47]*

It was reported as even more difficult for pharmacists who were alone in the pharmacy when someone attended for an *Umbrella* service because there was no one to look after the counter:

> *"Because, as a single pharmacist, sometimes, you find that it's very difficult to fit a consultation in. For example, because I've got a Dispenser, she'll work 37 and a half hours a week, so ..... she'll come in, for example, at half ten, she'll finish at seven. But my pharmacy's open from nine 'til eight.*

> *So if I get a customer, for example, coming in after seven o'clock, when my Dispenser's gone, so I'm by myself in the pharmacy at that ... time, that probably is the main challenge, trying to do that consultation. [Pharmacist, male, age group: <30, ID number: 24]*

Pharmacists felt that having more staff would be helpful but were aware that this was not possible due to financial reasons. One pharmacist said that he would ask the manager to come in the pharmacy if such a situation arose.

Pharmacy staff were aware that there was no money to hire more pharmacy healthcare assistants:

> *"I think it's difficult to do, unless we get more dispensing staff, but this pharmacy might say, "Well, we don't have the money for that". [Pharmacist, male, age group: <30, ID number: 24]*

Low levels of staffing were also a reason why some pharmacies could not deliver the larger range of pharmacy services ('Tier 2' service level):

> *"But we're not staffed to a great level. This is why ... somebody's always asked me, "Why aren't you a Level, Tier 2 pharmacy?" and I tell them, "It's because I, I couldn't just, I, I, I can't, I couldn't do that service in my pharmacy. It'll take too much, there's too much time pressure and staffing pressures on, on my, on my staff that I wouldn't be able to run a Level 2 service, or Tier 2 service." I have an interest in, in doing that." [Pharmacist, male, age group: 30-39, ID number: 86]*

Some pharmacists felt that shifting the workload to pharmacy healthcare assistants could help to take pressure off the pharmacist:

> *"I think, the only thing I can think of is, in community pharmacy, it can sometimes be obviously, a, a, a burden on pharmacists in terms of dealing with the service, taking the time out to, kind of, do a consultation, so I think if that kind of workload was a bit shifted onto other members of staff, that might be quite good." [Pharmacist, female, age group:<30, ID number: 47]*

However, others felt it would not have a big impact because there were some parts of the role that had to be done by the pharmacist:

> *"It, it would, it would help a little bit more, but some things really do just need my attention only, as opposed to support staff." [Pharmacist, male, age group: <30, ID number: 31]*

Moreover, some pharmacists were concerned that pharmacy healthcare assistants were not paid enough or not qualified enough to provide more complex services.

However, when pharmacy healthcare assistants were asked how they would feel about providing more services, most pharmacy healthcare assistants tended to be willing to take on a bigger role:

> *"But, like, say for example if we were allowed to do, like, the morning after pill, then, you know, we, we would happily do it." [Pharmacy healthcare assistant, female, age group: 30-39, ID number: 497]*

With regards to the range of services offered, some pharmacists felt that it would not be feasible for them to offer more services, indicating that they were working already at their limit:

> *"So, I mean, offering a, a ten, 15 minute consultation is, is not a problem when it's a bit quieter but then if there were more, if there were another range of services, it might not always be practical, that's the only downfall." [Pharmacist, female, age group, <30, ID number: 47]*

Some pharmacists felt that the nature of a pharmacy as walk-in service was challenging as consultations could not be planned in advance. These pharmacists were therefore supportive of introducing an appointment system:

> *"Well I think it would be great to, sort of, have a place where certain bookings were made, maybe, so it could be a more controlled process and it wasn't just that people are coming up on the day and saying that, "We need to, you know, have this one (…) So, yeah, you know, like how they do in Umbrella clinics and they have to book appointments, so say if you want your contraception pill or you want your Sayana Press, you can just book in and then we'll, we can sort that out for you." [Pharmacist, female, age group:<30, ID number: 47]*

Workload did not appear to be dependent on whether pharmacists were working in a 'Tier 1' or 'Tier 2' pharmacy. Instead, workload issues were associated with the level of staff that pharmacists had available.

In summary, added individual workload was an issue for some but not all pharmacy staff. Pharmacists were more affected by workload than pharmacy healthcare assistants. Integrating the workload caused through the delivery of sexual and reproductive health services into all other tasks, and low staffing levels were reported as challenging and stressful for pharmacy staff.

Staff motivation to deliver services

Pharmacy staff were generally highly motivated to provide *Umbrella*'s services and were overall positive about *Umbrella*:

> *"Well, with me, with me, I've often thought that with such a good service, Umbrella service is really good." [Pharmacist, male, age group: 30-39, ID number: 86]*

Pharmacy staff enjoyed taking on a bigger role through the provision of sexual and reproductive health services and many felt that their extended role increased their job satisfaction:

> *"Oh yeah, I do, I do definitely feel like it's improved my job satisfaction and just made me more clinically in check and just, just to basically have just more of a clinical responsibility for patients upfront, which is nice to have a consultation with them, and yeah, I think we're just, just providing a more meaningful service. Yeah." [Pharmacist, age group: <30, ID number: 96]*

Further, many pharmacy staff members stated that they were grateful to be able to help other people by offering the services:

> *"I think the best thing about delivering sexual health services is being able to be in the position to help somebody that is not happy about what's happened or maybe gets in an accident and they, they're quite worried, they're quite anxious, they don't know how to feel. So when I see young women coming in like that asking for the emergency contraception pill, I do feel grateful that I'm in the position that I can encourage them and, kind of, reassure them that, "It's okay. You've come in the right time. You can actually have this pill, this will help you. And, you know, don't feel bad about your situation and you're gonna be absolutely fine."[Pharmacist, female, age group: <30, ID number: 47]*

Pharmacy staff were also found to be proud to be playing an important role and to take pressure off the healthcare system:

> *"And I think with providing the, kind of, condom distribution and things, it is also linked to whole, linked to STIs so, kind of, preventing unwanted pregnancies but then it's also preventing the spread of, like, sexually transmitted diseases. So ultimately, really, you're reducing the, kind of, strain of, on healthcare as well." [Pharmacy healthcare assistant, female, age group: <30, ID number: 566]*

Both pharmacists and pharmacy staff also felt that the delivery of services increased their employability:

> *"I guess for me, personally, in offering the Umbrella services it does mean that you'll be more employable. So say if I went, so when I'm an actual pharmacist, if I'm locum-ing at, like, different pharmacies I guess the fact that you offer them services does, kind of, make you more employable to various pharmacies if you are trained in a number of*

> *services."[Pharmacy healthcare assistant, female, age group: <30, ID number: 566]*

In summary, pharmacy staff were generally motivated to deliver pharmacy-based SRHS.

Recognition for delivering services

While pharmacy staff generally were motivated to deliver sexual and reproductive health services, many felt that they did not receive sufficient recognition for going beyond their traditional role.

While pharmacists generally described that they were receiving a lot of recognition from pharmacy users, pharmacy healthcare assistants felt that they were not perceived by users as qualified healthcare providers:

> *"I think when they come in, they just assume that, again, like I said with the, with the male figure working in the pharmacy, we're just a shop assistant or counter ... but, you know, so I think they, that's what happens a lot, 'cause we, we obviously, we take blood pressure as well and I say .... "Oh, come on, I'll take your blood pressure," 'cause I'm quite ... and a lot of them are fine, but some of them sort of think, "Oh," and they look and they expect (Pharmacist Name) to do it. But this is the reason we get taken on these things, to free up (Pharmacist Name)'s time. You, do you know? And, yeah, I do think sometimes that the public don't realise that, not all of the staff within a pharmacy, but a majority of the staff within a pharmacy can do these things as well as a pharmacist. [Pharmacy healthcare assistant, female, age group: <50, ID number: 593]*

In line with this, pharmacy users generally trusted pharmacists and felt they were qualified to provide the services they were offering. However, one user pointed out that the qualifications of the pharmacist hanging in the consultation room showed her that the pharmacist was qualified, possibly suggesting that the user needed to be reassured of the pharmacist's qualification:

> *"They also have, like, all the certificates in there so you know, like, that your pharmacist's qualified." [Pharmacy user, female, age group: 25-29, ID number: 1056]*

Pharmacy healthcare assistants reported feeling that pharmacy users trusted them less than pharmacists:

> *"Patients and customers don't see the pharmacy team as professionals, as they would the pharmacist. So they'll trust more what the pharmacist is saying than the pharmacy advisor." [Pharmacy healthcare assistant, female, age group: 30-39, ID number: 497]*

However, pharmacy healthcare assistants felt that wearing an *Umbrella* name badge made users trust them more and made them more approachable:

> *"Because I've got the name badge on, that sort of, like, breaks down the barrier that they, they're, I'm approachable to for that information, so, because they, they know that I'm aware of the, the things we can provide for them." [Pharmacy healthcare assistant, male, age group:40-49, ID number: 492]*

Overall, pharmacy healthcare assistants felt that they should get more recognition for what they were doing from pharmacy users:

> *"I mean we, we've got access to all these records, to all, to, to lots of things, we're messing with controlled drugs all the time, we're obviously doing these services, especially the sexual health services as well. So I do think, you know, yeah, there should be a bit more recognition, you know, but, and also for people that are, that are coming into the pharmacy and using the pharmacy, so, like I say, again, that they realise we're not just gonna take their blood pressure and not know what we're doing, or we're not gonna offer them a, a service and not know what we're doing. I want them to be confident that they can come in to us and speak to us ..." [Pharmacy healthcare assistant, female, age group: <50, ID number: 593]*

Pharmacy healthcare assistants also felt that they should get some financial recognition for working outside their role:

> *"I guess the worst thing in general would be, kind of, there's not any real recognition for it. You're offering these services but it's not reflected in, kind of, the pay." [Pharmacy healthcare assistant, female, age group: <30, ID number: 566]*

However, pharmacy healthcare assistants did not expect to be paid for providing the services, but did feel that they should be reimbursed for the time they spent getting trained:

> *"Just for the training. If you're being trained then you've got to commit, it's a part of the service, you know what I mean? That's, that's my job, I don't feel like, that I should be personally given any more money because somebody is coming in, I've give them the right information. That's part of my job." [Pharmacy healthcare assistant, female, age group: >50, ID number: 567]*

More recognition was also something mentioned by pharmacists who felt that they were providing services but were not being asked for feedback about delivering the services:

> *"But there, there isn't a real big feedback mechanism. Other than you talking to me today, I've not had the chance to speak to anybody about .... the services that we're able to offer 'cause they don't actually seek feedback from us. They're only interested in feedback for the, the service users, not actually ... the providers of the services." [Pharmacist, male, age group: 30-39, ID number: 86]*

And even those pharmacists who felt that they could give feedback in refresher trainings stated that they would like to be more involved in decisions regarding the delivery of sexual and reproductive health services:

> *"So, yeah, it would be nice, maybe, to get more chances to give our feedback and get more involved in the, kind of, service as well: how, what, kind of, for example, if they decide on providing new services, getting our, our opinions on it first, engaging with us as well, a bit more. So that's definitely something to improve on, I think. It can feel like we're, we're far away from the, kind of, decision making process." [Pharmacist, male, age group: <30, ID number: 24]*

Not being asked for feedback was also something that pharmacy healthcare assistants identified:

> *"Because we've never been asked for feedback. I mean, we get mystery shopped. But we don't really get asked, like, you know, what else could we possibly do to improve the services, or, you know, what do you think. We don't really get asked that, to be honest." [Pharmacy healthcare assistant, female, age group: 30-39, ID number: 497]*

However, one pharmacist stated that she believed that the annual awards, organised by *Umbrella* every September, would provide staff, and particularly pharmacy healthcare assistants, with recognition for their work:

> *"You know, that type of thing, or the counter staff can engage more 'cause they feel that, "Oh, at the end of it we are going to get a certificate, or an award, or something like that." I think that, I think that's quite good." [Pharmacist, female, age group: 30-39, ID number: 71]*

In summary, while pharmacists found that their efforts were recognised by pharmacy users, this was less the case for pharmacy healthcare assistants. Both pharmacists and pharmacy healthcare assistants lacked recognition by their health provider and felt that they should have more opportunity to provide feedback. Pharmacy healthcare assistants also wanted financial recognition for going beyond their role. Events were pharmacy staff efforts were acknowledged were positively perceived by pharmacy staff.

8.5. Interpretation of the results

As outlined in section 2.6.4, Normalisation Process Theory (NPT) was used as a lens through which to interpret the findings from the qualitative study (C. R. May et al., 2009). As described in section 7.10, the findings from the thematic analysis were mapped onto the four NPT constructs: Coherence, Cognitive Participation, Collective Action, and Reflexive Monitoring where applicable. The NPT toolkit was used to support the process.

Using NPT suggested that pharmacy-based SRHS have great potential but are not yet embedded into routine practice. The results of the NPT toolkit (C. May et al., 2015) are attached in Appendix 12. Figure 11 illustrates which subthemes captured the four constructs of NPT. The results of the interpretation are now presented along the four NPT concepts.

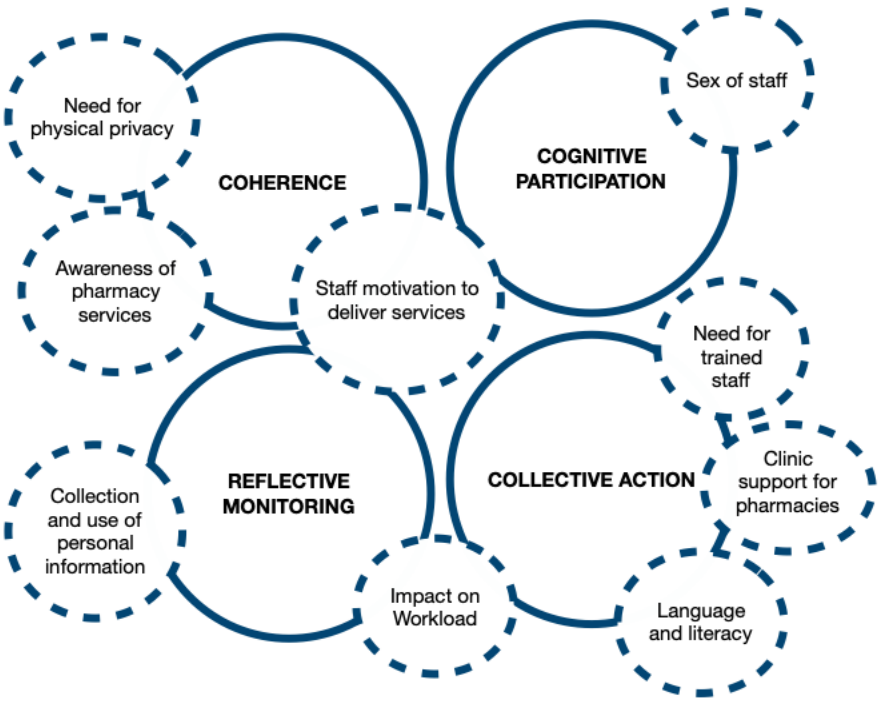

FIGURE 11 SUBTHEMES RELATING TO THE FOUR NPT CONSTRUCTS

8.5.1. Coherence

Coherence explored the findings in terms of whether people involved in the delivery of pharmacy-based sexual and reproductive health services demonstrated understanding of its value, benefits and importance. It also looked at whether people involved in the provision of SRHS understand their specific tasks and responsibilities around a set of practices.

Participants collectively agreed about the purpose of pharmacy-based SRHS and had a good understanding of the aims and objectives and expected benefits of the intervention. As captured under the subtheme 'Staff motivation to deliver services' pharmacy staff were aware that they were providing the services to help people, to take pressure off the healthcare system and to contribute to the prevention of STIs and unwanted pregnancies.

However, as the theme 'Need for Physical Privacy' showed, a few pharmacy healthcare assistants seemed not to have a strong understanding that discreteness was important when delivering sexual and reproductive health services to pharmacy users for reasons of privacy. Further, as shown in the sub-theme 'Awareness of pharmacy services', one pharmacy healthcare assistant was found not to be familiar with the criteria that pharmacy users had to fulfil in order to be allowed to access an *Umbrella* service.

8.5.2. Cognitive Participation

Cognitive participation explored whether people involved in the delivery of services appear to be driving its provision forward. In context of this study this could mean that staff engage with each other to deliver services or reorganise themselves in order to collectively contribute to the delivery of SRHS. Cognitive participation is also about whether people define actions and procedures to sustain a practice and to stay involved. This may involve rethinking individual and group relationships. Another important component of cognitive participation is whether other people involved in the delivery of pharmacy-based SRHS believed it is right for them to be involved.

Pharmacy staff were reorganising themselves to contribute to the work involved in the delivery of SRHS. For example, as shown in the subtheme 'Sex of staff', male pharmacists involved female pharmacy healthcare assistants in the delivery of services. Female pharmacy healthcare assistants were asked to chaperone consultations with women and to convince women to conduct a consultation with a male pharmacist. By these strategies, pharmacy staff were driving pharmacy-based sexual health services forward.

Further, as shown in the subtheme *motivation,* pharmacy staff were supportive of the continuation of pharmacy-based SRHS and expressed that *Umbrella* is a great service. While pharmacists felt trusted by pharmacy users, pharmacy healthcare assistants sometimes felt that pharmacy users did not feel that it was appropriate for pharmacy healthcare assistants to be involved in the delivery of SRHS and that pharmacy users did not trust them as much as they trusted pharmacists. In terms of how this could be managed in the pharmacy, some pharmacy healthcare assistants felt that wearing an *Umbrella* badge increased pharmacy users' trust in them and made them more approachable.

Although only two subthemes were identified to be relevant to cognitive participation, both were found to be highly relevant in the delivery of sexual and reproductive health services. Possibly, this area needs more depth in future studies.

8.5.3. Collective Action

Collective action explored how pharmacy-based SRHS appeared to have been operationalised in practice by pharmacy staff, whether the allocation of work seemed appropriate and whether they were sufficiently supported by their commissioner.

As shown in the sub-theme 'Impact on workload', pharmacists generally felt that the workload was feasible.

However, some felt under pressure and found it difficult to manage the workload, especially where staffing levels were low. This indicates that services have not been fully normalised to become part of the routine pharmacy practice. However, none of the pharmacy staff interviewed indicated that work pressure would be a reason to discontinue delivering *Umbrella's* services. However, for some pharmacists delivering 'Tier 1' services, work pressure and lack of staff was a reason why the more extended 'Tier 2' pharmacy service could not be delivered.

While some pharmacists found that the work allocated to pharmacy healthcare assistants was appropriate, others felt they could be more involved and take pressure off the pharmacist. That pharmacy healthcare assistants could not collect pharmacy users' data electronically but had to collect it on paper forms, and that pharmacists had to enter the data later onto the web based system was perceived as an unnecessary duplication of work.

Further, while pharmacy staff were overall satisfied with their commissioner, they sometimes felt not adequately supported. As covered in the sub-theme 'Clinic support for pharmacies', staff experienced difficulties getting through to the Clinical Help Line and making copper coil appointments at the clinic for users presenting for emergency contraception. Further, the subtheme 'Need for trained pharmacy staff' showed that sometimes not having a trained pharmacist available created a barrier to the delivery of pharmacy-based sexual and reproductive health services.

As outlined in the subtheme 'Language and literacy' pharmacy staff had developed strategies to get information across to pharmacy users who did not understand English or were illiterate. They used *Google Images* and *Google Translate* to enable the delivery of pharmacy-based SRHS. However, this was not always successful. Arguably, if the pharmacy staff had translation services or documents available in different language by the health provider this would help them to deliver SRHS.

8.5.4. Reflective Monitoring

Reflective Monitoring described whether staff construed value in pharmacy-based SRHS within their work, whether they were informed about the effects of the services, whether they collectively and individually felt that delivering services is worthwhile. It also looked at whether practices relating to SRHS were modified.

As described in the subtheme 'Staff motivation to deliver services', pharmacy healthcare assistants felt that offering the services had a positive impact on their employability and job satisfaction. However, staff felt that they did not receive feedback on the delivery of services by the health provider, limiting the degree to which they were informed about the effects of SRHS and their perceived recognition by the health provider.

Finally, while pharmacy staff were doing most work required by them, they modified some of the tasks. For example, as presented in the subtheme 'Collection and use of personal information', one pharmacist stated that he would not collect pharmacy users' name and addresses.

Further, as shown in the subtheme 'Impact on workload' some pharmacists allowed pharmacy healthcare assistants to enter data on PharmOutcomes® although they were not supposed to do this.

To sum up, pharmacy staff appear to feel that their work related to the delivery of sexual and reproductive health services is not being sufficiently acknowledged by their health provider. Further, pharmacy staff are modifying tasks without communicating this to the health provider. Both lack of perceived recognition and modification of tasks may inhibit the quality and consistency that services are delivered with.

8.6. Discussion

8.6.1. Summary of the main findings

In total, 30 interviews, 15 with pharmacy staff and 15 with pharmacy users were included in the analysis. Four themes and several subthemes were identified: 1. Pharmacy as a venue for SRHS (need for physical privacy; convenience; need for trained staff), 2. Staff-user interaction (sex of staff; staff interpersonal skills; collection and use of personal information; language and literacy), 3. Implementing SRHS into pharmacies (awareness of pharmacy services; clinic support for pharmacies; ease of use of STI self-sampling kits); 4. Impact of delivering SRHS on pharmacy staff (impact on workload; staff motivation to deliver services; recognition for delivering services).

Convenience was commonly named as a valuable feature of pharmacies. Users liked that pharmacies were easy to get to and that no appointments needed to be scheduled. However, not always having trained staff available was found to be a disadvantage of pharmacies as a venue for SRHS. Pharmacy staff were aware that physical privacy, defined as not being able to be overheard or overseen presenting for a SRHS, was important to users. The need for physical privacy was caused by fear of stigmatisation by staff and other users being present in the pharmacy. While physical privacy was largely well addressed through consultation rooms during the service delivery, there was a lack of privacy when requesting SRHS at the counter. The busyness of the pharmacy, the physical layout of the pharmacy and pharmacy staff discretion impacted the level of privacy experienced by service users.

With regards to the staff-user interaction, pharmacy users were largely satisfied with pharmacy staff interpersonal skills. However, where pharmacy staff were being less confident in the service delivery, judgemental or not respectful of users' choices, pharmacy users had a more negative experience. A difficulty for pharmacy staff was to deliver services to users who were not fluent in English or who were illiterate. Same sex delivery was found to be important to some users. However, preferences were not straightforward and could not be presumed. In one case, the preference seemed to be related to the pharmacy users' sexuality. For some users, not having a pharmacy staff member of a certain sex was a barrier to service delivery. Personal information privacy was a concern for pharmacy users, and some felt that the data collection should be as anonymous as possible. However, other participants felt that patient data should be shared between pharmacies and other health providers to save them repeating the information after a prior visit to an *Umbrella* service.

Delivering SRHS had an impact on pharmacy staff workload and their motivation. The consultation which included the collection of data on pharmacy users was time consuming and added to pharmacists' workload. Having pharmacy users pre-register themselves was mentioned as a possible solution to minimise the added workload. While staff were largely motivated to deliver SRHS, some staff, and pharmacy healthcare assistants in particular, felt that they did not receive sufficient recognition for their role.

With regards to the implementation of pharmacy-based SRHS, pharmacy staff and users felt that there was not sufficient awareness for pharmacy services and pharmacy users experienced difficulties finding out where they could obtain *Umbrella*'s pharmacy services. Further, pharmacy staff felt that there was not sufficient support from clinics as they reported a lack of clinical appointments for the copper coil and difficulties to get through the clinical advice line. With regards to the services provided, many pharmacy users experienced difficulties conducting the STI self-sampling kits, particularly the blood test, and participants felt that it would be beneficial if pharmacy staff could provide support for the blood test.

Interpreting the findings using the four constructs of NPT showed that there were several factors that required development, suggesting that pharmacy-based SRHS are not yet fully integrated into routine practice. Although pharmacy staff collectively agreed about the purpose of the intervention, some pharmacy healthcare assistants had a limited understanding of who is eligible for the services and how important it is to be discreet when delivering services. Pharmacy staff were driving the delivery of services proactively. However, some pharmacy staff, and pharmacy healthcare assistants in particular, did not feel trusted by pharmacy users. Further, pharmacy staff sometimes felt that they did not get sufficient support from collaborating clinics and lacked staff resources. Although the delivery of services was generally perceived as feasible, pharmacy staff felt that work allocation was not optimised. This indicates that there is potential to further improve pharmacy-based SRHS. Finally, staff considered the delivery of services to be valuable; however, they sometimes modified the tasks where they felt appropriate.

8.6.2. Strengths and Limitations of the Interview Study

A strength of this study is the rigorous manner in which it was conducted. A purposive approach to sampling was used and the topic guide for this study informed by a systematic review and experts in the area. To increase the rigour of the data analysis, 30% of transcripts were coded by more than one researcher. Further, the coding frameworks, themes and the interpretation by NPT was discussed amongst four researchers and the contrasting perspectives of the different researchers involved were considered as a strength of the study.

A major strength of the study was that three participant groups: pharmacists, pharmacy healthcare assistants and pharmacy users were interviewed. Interviewing three groups involved in the delivery of sexual health services allowed a multi-perspective insight into pharmacy-based sexual health services. This study is also one of few that included the experiences of pharmacy healthcare assistants.

Given that interviews were exclusively conducted with pharmacy staff and pharmacy users from Birmingham (West Midlands), it has to be acknowledged that some interview study findings may be more transferrable to other areas across the UK and beyond than others.

For example, language and communications barriers may also be a concern in areas with comparable or high proportions of people who don't speak the local language but be less of a barrier in areas with lower proportions of people who are not native in the local language. Further, some problems regarding the service delivery, for example a lack of appointments for the copper IUD, may be unique to the way that services are delivered by the health provider *Umbrella* in Birmingham. However, other findings are likely to be transferrable to other areas, for example concerns around privacy and pharmacy workload.

Data saturation was achieved for both pharmacy staff and pharmacy users, and clear themes were identified. However, no pharmacy users under the age of 21 and over the age of 34 years and no people from "other ethnic groups" were recruited for interview. Further, while women from a large range of ethnic groups were interviewed, only one male who self-identified as Asian/Asian British and one male who identified as Mixed/Multiple ethnic group could be interviewed. Considering the results from the retrospective study, which showed that a range of patients with different demographics use *Umbrella's* pharmacy-based SRHS; the comparatively limited demographics of those interviewed in this study may indicate that certain demographic groups were more difficult to reach for involvement in this research. Since online recruitment was mainly used to recruit users, it could be that younger demographics were more successfully targeted by the recruitment material. However, as the retrospective study showed, younger people were also more likely to access pharmacy-based SRHS. Possibly, fewer men participated in the study as they did not want to talk to a female researcher about SRHS. However, as the retrospective quantitative study showed (see chapter 4), the males were generally less likely to access the pharmacy for sexual and reproductive health services. Further, while many females who had used the emergency contraception were interested in taking part in a study, it was more difficult to recruit users of other services such as for example the contraceptive injection. However, as the retrospective quantitative study showed (see chapter 4), emergency contraception is the most used *Umbrella* service. It is also likely that only the more confident pharmacy users might have been willing to take part in an interview. Further, as explained in the method section, under 16-year olds, people lacking consent and people with communication needs were excluded from the study for several reasons.

It cannot be ruled out that groups of people who were not interviewed in this study would have had different views or would have led to different finding.

Another limitation is that non-pharmacy service users and non-pharmacy service providers were not included in the study. Including these groups may have enabled an understanding of the barriers to the uptake of pharmacy-based sexual and reproductive health services.

Considering views of the healthcare professionals and the population who are eligible to access the service, rather than those who had access or were delivering services should be considered in future research.

As the systematic review showed (see chapter 6), this was only the second high-quality qualitative study on pharmacy based SRHS in England. However, it was the first study to date to explore a large range of pharmacy-based sexual and reproductive health services and this opportunity was unique to Birmingham, where the health service *Umbrella* provides various SRHS through pharmacies. The use of NPT in interpreting the findings of the interview study is a strength. NPT has been shown to be important in understanding the potential of embedding and integrating complex interventions. The interpretation of the qualitative findings showed that pharmacy-based SRHS are not fully integrated in pharmacy practice yet. For example, pharmacy staff felt under time pressure and found it difficult to manage the workload. However, NPT also highlighted aspects that contribute to normalisation of services. For example, it highlighted that pharmacy healthcare assistants wearing an Umbrella badge may increase pharmacy users' trust in them.

However, the application of the constructs of the NPT to the findings of the interview study is subjective. In order to limit this subjectivity of the application of NPT, the findings and interpretation was discussed within the research team.

While primary data on users' and staff experiences of pharmacy-based SRHS were only collected through the interview study, it may have been insightful to also conduct a survey of pharmacy users' and staff experiences, and triangulate the findings with data from the interview study. In hindsight, demographic information could have been collected at the end of the survey and this information used to sample participants using maximum variation sampling. The interview study, however, can inform future surveys on users' and staff experiences across a wider geographical area and in larger samples.

8.6.3. Comparisons with the existing literature

In line with our systematic review, convenience was commonly named as reason why pharmacy users had accessed the pharmacy (Gauly et al., 2019). Amongst others, pharmacy users liked that they did not have to travel far to get to the pharmacy. As shown in previous research geographical proximity and long opening hours were aspects that mattered to pharmacy users the most (Watson et al., 2019). According to digital NHS data, there are more than 11,500 pharmacies in England in 2018/2019, which is an 9.8% increase since 2008/2009 (NHS Digital, 2020), suggesting that pharmacies have become even more physically accessible over the years. However, several issues and areas for improvement were identified.

Stigma was identified as a reason why privacy was highly important to pharmacy users. Some pharmacy users reported that they did not want to be recognised by staff or users in the pharmacy.

In line with this a recent systematic review on emergency contraception found that users did not want to use pharmacies where they knew the pharmacy staff or may run into someone they knew (Mooney-Somers et al., 2019).

While most pharmacy users felt that private consultation rooms were providing sufficient privacy during the service delivery, one pharmacy user found that the consultation room was not soundproof which limited the perceived level of privacy. That privacy issues can remain even when using private consultation rooms was also found in a previous study (Dhital et al., 2010). Further, the interviews conducted showed that privacy when requesting a service was a major concern for pharmacy users and that staff were aware of this. Pharmacy users stated that the busyness of the pharmacy and the layout of the pharmacy (e.g. queuing system; location of counter) impacted pharmacy users' experience of privacy. In line with this, a recent study on pharmacy-based opioid substitution treatment showed that the pharmacy layout could enhance or hinder the perceived level of privacy of pharmacy users (Le & Braunack-Mayer, 2019). Physical privacy in the pharmacy was also found to be a concern in a study on the utilisation of community pharmacy space to enhance privacy (H. Laetitia Hattingh et al., 2016). This study concluded that pharmacies' layout and systems to address privacy needed to be explored in the future (H. Laetitia Hattingh et al., 2016).

Lack of trained staff was a concern for pharmacy staff and pharmacy healthcare assistants in particular and sometimes created a barrier to service access. Pharmacy staff stated that locums were sometimes untrained. Previous studies showed that locums did not get trained for extended sexual and reproductive health services due to difficulties accessing trained or working only little in the pharmacy (Braund et al., 2018; G. Thomas et al., 2009).

With regards to interpersonal skills of pharmacy staff it was found that it was important to pharmacy users that their choices were respected, and that staff were confident and non-judgemental. That perceived judgement negatively impacts the experience of users was also shown in a previous review on emergency contraception (Mooney-Somers et al., 2019). Respecting patient preferences has been found to be an important part of a patient-centred healthcare model (Elwyn et al., 2014) and workforce confidence in the patient experience has been linked to a positive patient experience (Owens & Keller, 2018). Further, a recent survey with the public showed that people would be more likely to use community pharmacy services if pharmacy staff had strong interpersonal skills (Ali Mawfek Khaled Hindi et al., 2019). This highlights the importance of staff interpersonal skills on the delivery and impact of pharmacy-based SRHS.

Many pharmacy users in this study expressed that they had preferences regarding the sex of pharmacy staff. Same sex delivery of pharmacy-based services appeared to be highly important, particularly to females. However, one male pharmacy user stated that he preferred to be delivered a service by female pharmacy staff as he was attracted to males. In line with this, research conducted by Poria and colleagues (2019) has shown also shown that participants relate their preferences to their sexuality.

However, in their study, preferences were related to situations where health care professionals would be required to conduct an examination of intimate areas of the body (Poria et al., 2019). Lesbian and gay participants stated that they preferred health care professionals of the opposite gender because they felt that heterosexual women were less friendly to lesbians and heterosexual males less friendly to gay men (Poria et al., 2019). Our study showed that gender preferences were not straightforward but that they were important to pharmacy users, even in situations where no physical examination but only consultations took place. It was suggested that there should be more transparency on whether female or male pharmacy staff are working at the pharmacy.

Pharmacy staff in this study described that it was difficult to deliver SRHS to pharmacy users who were not fluent in English or who were illiterate. Some pharmacy users had to be referred to the sexual health clinic (Whittall Street Clinic) in Birmingham because of language barriers. Language barriers adversely affect patients in their comprehension and adherence, quality of care and patient and provider satisfaction (Schwei et al., 2016). Over the last decade, there have been growing numbers of immigrants in the UK, coming from more diverse backgrounds than ever before (Somerville, 2009); this is likely to increase the incidence of language barriers. A study from America showed that almost half of pharmacists were dissatisfied with their communication with pharmacy users with limited English proficiency but that community pharmacies using telephone interpreting services were more likely to be able to verbally communicate in non-English languages (Bradshaw et al., 2007). Language barriers were also identified to be a concern in an Australian study on pharmacists' experience of the concept of 'culture' in their everyday practice environment (Fejzic & Barker, 2019). Hence, language barriers can negatively impact the delivery of pharmacy service.

Pharmacy staff collectively agreed that the delivery of services added workload through the consultation time and data collection. It was suggested that allowing pharmacy users to pre-register themselves would save time. With regards to the collection of personal information, this study found that it made many pharmacy users uncomfortable and that data privacy was a major concern for many. However, some pharmacy staff and pharmacy users felt that data should be shared with clinics. This is supported by a systematic review on extended pharmacy services, where not having access to patients records was perceived as a barrier to providing extended services (Ali M.K. Hindi et al., 2019). Access to health records was also deemed to be important to make patient care decisions in a recent study (Famiyeh et al., 2019). Concerns about time constraints were also identified in a study on pharmacists' attitudes towards the implementation of pharmacy based SRHS (Hilverding & Mager, 2017) and various further studies on pharmacy-based SRHS (Deeks et al., 2014; Gudka et al., 2009, 2014; Hussainy et al., 2011; Parker et al., 2015; Whelan et al., 2013). This study also showed that it was difficult to deliver sexual and reproductive health services, particularly when pharmacies had staffing difficulties, for example when pharmacists were alone in the pharmacy.

Lack of staffing to cover other pharmacist responsibilities while the consultation was occurring was also found to be an issue in a previous study (Whelan et al., 2013).

Overall pharmacy staff in this study were motivated to deliver sexual and reproductive health services. However, some pharmacy staff and pharmacy healthcare assistants in particular, felt that they did not receive sufficient recognition for working outside their traditional role. It also emerged that both pharmacists and pharmacy healthcare assistants wanted to be asked for their feedback by the health providers and be more involved in decisions on pharmacy-based SRHS. Pharmacy staff also wanted financial recognition for their extended role. This finding is supported by a recent review on extended pharmacy services (Ali M.K. Hindi et al., 2019). Hence, a perceived lack of financial recognition is not unique for SRHS but extended pharmacy services in general.

Both pharmacy users and pharmacy staff in the current study felt that there was not sufficient awareness of pharmacy services. In line with this, a recent systematic review on patient and public perspectives of pharmacies in the UK showed that public or patient awareness of extended pharmacy services was low (Ali M.K. Hindi et al., 2018). Hence, while this study is not the first to show that extended pharmacy services lack public awareness, it is the first to show that this is true for a large range of SRHS.

Pharmacy users in this study reported that they had difficulties completing the blood test which is part of the STI self-sampling kits. Difficulty in drawing the blood sample was also the most commonly reported reason for not returning HIV self-sampling kits in another UK study (L. J. Brown et al., 2018). However, a Dutch study in which dried blood spot testing was used to screen for syphilis, HIV and hepatitis B showed that the majority of participants found the finger-prick test easy to complete (van Loo et al., 2017). This suggests that the collection of blood samples is generally feasible if a user-friendly self-sampling kit is provided.

While a previous study showed that many pharmacists did not know where women could get a copper coil inserted (Wong et al., 2017), *Umbrella* offers a clear pathway for women. However, pharmacy staff felt that there were not sufficient appointments available. Increased availability of appointments is important to enable women get the copper coil, the most effective method of emergency contraception, inserted.

8.7. Chapter summary

Overall, 15 pharmacy staff members and 15 pharmacy users were interviewed for this study. This chapter presented the results of the interview study. It gave an overview of pharmacy users' and staff characteristics. An overview of all four themes was provided: 1. Pharmacy as a venue for SRHS, 2. Staff-user interaction, 3. Implementing SRHS into pharmacies and 4. Impact of delivering SRHS on pharmacy staff. Findings were then interpreted using Normalisation Process Theory. This highlighted that there is still room for improvement for SRHS to become embedded in pharmacy practice.

In the discussion, the main findings were summarised, the strength and limitations of the study discussed and comparisons to existing literature made. In the next chapter (chapter 9) the findings of all three studies: the systematic review, the quantitative study and this qualitative study are synthesised based on the Pillar Integration Process.

9. Data Synthesis: Methods & Results

9.1. Chapter overview

The fourth and final objective of this thesis was to synthesise all findings to develop recommendations for service optimisation. The objective is addressed in the current and subsequent chapter 10. In the current chapter, all results from this thesis are synthesised. In the following chapter (chapter 10), recommendations for service optimisation are developed based on the discussion of the integrated findings.

The current chapter is split into three major sections: In the section 9.2, the method utilised to integrate all results is introduced. In section 9.3, the findings from the data synthesis are presented. In section 9.4, the strengths and weaknesses of the method used to integrate the different study components are discussed.

9.2. Data synthesis Method

As justified in section six of the second thesis chapter, the data synthesis was based on the Pillar Integration Process (PIP), a technique to integrate mixed methods research, (R. E. Johnson et al., 2017). It is now briefly introduced to familiarise the reader with the methods of PIP.

9.2.1. Pillar Integration Process

The Pillar Integration Process (PIP) uses a joint display, which is a table or matrix used to draw out new insights by bringing data together through visual means (Fetters et al., 2013; R. E. Johnson et al., 2017). The joint display used in the PIP consists of five columns (see Figure 12). The PIP is carried out in four stages: 1. Listing, 2. Matching, 3. Checking and 4. Pillar Building.

The Pillar Integration Process (PIP) was adapted in order to allow the integration of three (instead of two) data sources. The development was conducted by J.G. and discussed with and approved by Dr Amy Grove, Assistant Professor at Warwick Medical School and co-developer of the PIP. Hence, as the changes made to the PIP have been approved by one of the co-developers, it can be considered an appropriate adaption to PIP and fit for this thesis.

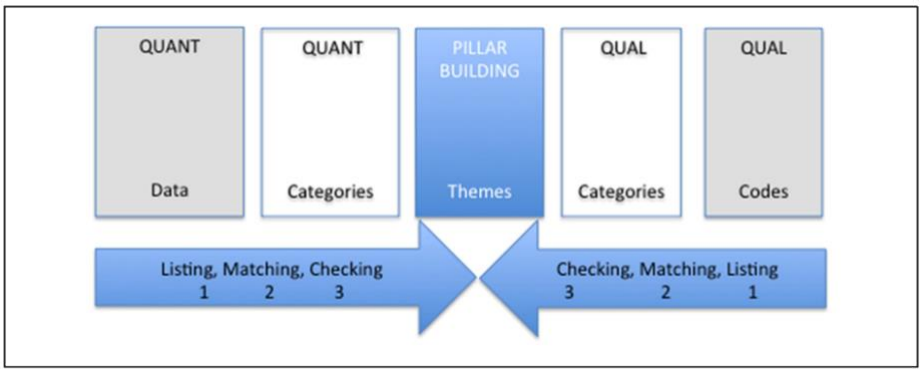

FIGURE 12 PILLAR INTEGRATION PROCESS AS DESCRIBED BY JOHNSON ET AL. (R. E. JOHNSON ET AL., 2017, P. 305)

The differences between the original PIP and the adapted PIP are shown in Table 16.

TABLE 16 DIFFERENCES BETWEEN ORIGINAL AND ADAPTED PILLAR INTEGRATION PROCESS

Comparison of original and adapted Pillar Integration Process (PIP)		Pillar Integration Process as outlined by Johnson et al. (2017)	Adapted Pillar Integration Process (developed by the PhD candidate for this thesis)	
Joint display		• Usage of a joint display consisting of five columns • Two columns for each data source to be integrated (raw data / categorised data) • Central column for themes developed in the final stage of PIP	• Usage of a joint display • One column for each data source integrated • Pillars are entered in the first column from the right and developed iteratively	
Stage 1	**Listing**	• Listing of findings from the first data source/dataset in form of raw data and categorised data	• Listing of findings from the first data source in form of text (only exception being the retrospective study for which raw data was occasionally added) • Listing of preliminary pillars alongside the findings	
Stage 2	**Matching**	• Listing of findings from the second data source/ dataset: raw data and categorised data is entered into two neighbouring columns; data not matching which findings from the previous dataset/ study is presented in a new row	• Listing of findings from the second data source in form of text into one column; listing and refining of preliminary pillars (data not matching is presented in a new row) • Listing of findings from the third data source in form of text into one column; listing and refining of preliminary pillars; data not matching findings from the other studies is presented in a new row	
Stage 3	**Checking**	• Reviewing of joint display; checking of all rows and columns for completeness and accuracy		
Stage 4	**Pillar Building**	• Themes are developed based on the listing and matching of data/findings, and presented in the pillar column	**Development of overarching themes**	• Pillars are grouped into overarching themes

The stages of the adapted PIP are described in the following section (9.2.2).

9.2.2. Adapted Pillar Integration Process

A visualisation of the adapted PIP developed for this thesis is presented in Figure 13. The different stages of the adapted PIP are explained in detail below.

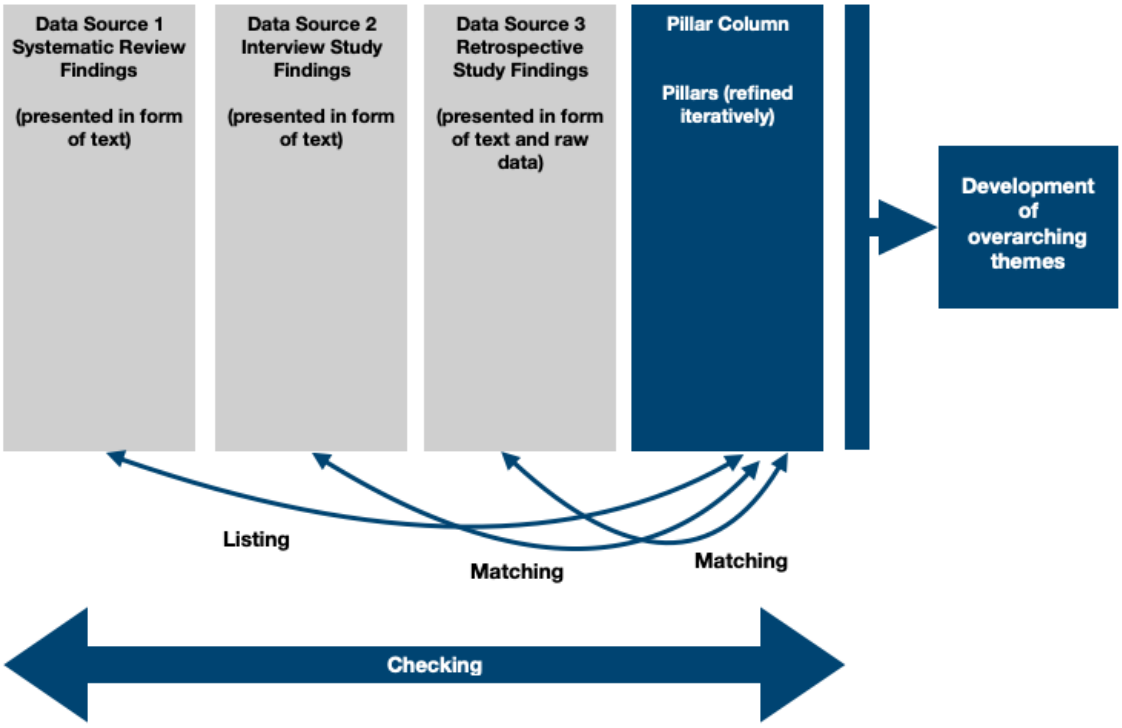

FIGURE 13 ADAPTED PILLAR INTEGRATION PROCESS

Listing

In line with the original PIP, findings from the first data source were listed in the first column of the joint display from the left. In this case, the systematic review findings were listed in the left column of the joint display. As the complete findings from all three data sources were listed in the joint display, the order in which the findings from the three data sources were listed was not expected to impact the results of the integration. In contrast to the original PIP, where quotes and percentages are listed alongside categorised data (e.g. themes/categories), only the text output of the findings were listed for the systematic review findings. The rationale for this was, that as raw data for the systematic review had already been presented in a previous chapter (chapter 8), listing the raw data from the original studies included in the review was deemed to be repetitive and unnecessary. Another benefit of only listing the findings in form of text was that the table was more manageable in terms of its size.

When trialling the adapted PIP, it was found to be difficult to match data in the second stage without having an overview of the pillars relating to the listed findings. In contrast to the Pillar Integration Process, where pillars are only developed and listed in the final stage, preliminary pillars were listed and adapted iteratively throughout the different stages. An example for the listing of the systematic review findings can be found in Table 17.

TABLE 17 EXAMPLE LISTING SYSTEMATIC REVIEW FINDINGS

Joint Display			
Acronyms: PU= Pharmacy user(s); P(s)=Pharmacist(s); Ps= Pharmacists; PS= Pharmacy staff; PHA=Pharmacy Healthcare Assistant(s)			
Systematic Review Findings	**Qualitative Study Findings**	**Retrospective Study Findings**	**Pillar**
• PU found it easy to get to the pharmacy • PU liked that there was no need to travel long distance • PU found it easier to get to pharmacy than to a clinic • PU liked the speedy service delivery at the pharmacy • PU liked the walk-in nature of pharmacies (no need to schedule appointment) • PU liked that they could attend for several health issues in one visit • PU liked that they could get both consultation and medication in one visit • PS felt that pharmacies were convenient to use for people due to their greater accessibility, better opening hours and quicker appointments (compared to other SRH providers)			**Convenience of pharmacy-based SRHS**

Matching

As specified in the original PIP, findings from the second data source were listed and matched in the second stage. The findings from the interview study were entered before the those from the retrospective study. Findings that matched or related to the findings from the systematic review were listed in the neighbouring column (second column from the left) in the same row (see Table 18).

TABLE 18 EXAMPLE MATCHING QUALITATIVE STUDY FINDINGS

Joint Display			
Acronyms: PU= Pharmacy user(s); Ps= Pharmacists; PS= Pharmacy staff; PHA=Pharmacy Healthcare Assistant(s)			
Systematic Review Findings	**Qualitative Study Findings**	**Retrospective Study Findings**	**Pillar (Themes)**
• PU found it easy to get to the pharmacy • PU liked that there was no need to travel long distance • PU found it easier to get to pharmacy than to a clinic • PU liked the speedy service delivery at the pharmacy • PU liked the walk-in nature of pharmacies (no need to schedule appointment) • PU liked that they could attend for several health issues in one visit • PU liked that they could get both consultation and medication in one visit • PS felt that pharmacies were convenient to use for people due to their greater accessibility, better opening hours and quicker appointments (compared to other SRH providers)	• Convenience was most commonly named as reason why PU used the pharmacy • PU found pharmacies easy to get to from work/home; • Pu found pharmacies accessible as they had long opening hours and there was no need to schedule appointments		**Convenience of pharmacy-based SRHS**

Where findings from the second study did not match findings from the systematic review, they were listed into a new row of the second column from the left. In this case, ‘not identified’ was entered into the neighbouring row (first column from the left). An example for this is shown in Table 19.

TABLE 19 EXAMPLE MATCHING QUALITATIVE STUDY FINDINGS

Joint Display			
Acronyms: PU= Pharmacy user(s); Ps= Pharmacists; PS= Pharmacy staff; PHA=Pharmacy Healthcare Assistant(s)			
Systematic Review Findings	**Qualitative Study Findings**	**Retrospective Study Findings**	**Pillar (Themes)**
• *Not identified*	• Ps appreciated that *Umbrella* has a clinical advice line but sometimes experienced difficulties to get through the line • Ps reported that there were not sufficient clinical appointments available for women wishing to get the copper coil (and those appointments available sometimes did not suit the PU) • Ps felt that it was impractical that they needed to call the clinics to arrange appointment as they did not have direct access to the appointment system but		**Clinical support for pharmacies delivering SRHS**

No raw data (in this case quotes) from the interview study were listed as these had been presented in chapter 8 of this thesis. The preliminary pillars developed as part of stage one (Listing) were adapted where appropriate. Once all findings from the interview study had been added into the joint display and all themes had been reviewed by J.G., findings from the retrospective study were added into the next column (third column from the left). In contrast to the systematic review and the interview study, the retrospective study aimed to explore the utilisation of pharmacy-based SRHS rather than pharmacy staff and pharmacy users' attitudes and experiences. It was therefore not expected that findings from the retrospective study would match with findings from the other two studies. Where findings from the retrospective study had the potential to support or match findings from the other studies, they were listed in the same row in the third column from the left. However, as the retrospective study was conducted for a different purpose, the matches between the retrospective study findings and the other two findings have to be treated with caution. Retrospective study findings which were found to potentially explain or support findings from the other studies were therefore written down in italics (see Table 20). Findings that were identified to be unrelated to findings from the other two studies were listed in new rows.

TABLE 20 EXAMPLE MATCHING RETROSPECTIVE STUDY FINDINGS

Joint Display			
Acronyms: PU= Pharmacy user(s); Ps= Pharmacists; PS= Pharmacy staff; PHA=Pharmacy Healthcare Assistant(s)			
Systematic Review Findings	**Qualitative Study Findings**	**Retrospective Study Findings**	**Pillar (Themes)**
• PU found it easy to get to the pharmacy • PU liked that there was no need to travel long distance • PU found it easier to get to pharmacy than to a clinic • PU liked the speedy service delivery at the pharmacy • PU liked the walk-in nature of pharmacies (no need to schedule appointment) • PU liked that they could attend for several health issues in one visit • PU liked that they could get both consultation and medication in one visit • PS felt that pharmacies were convenient to use for people due to their greater accessibility, better opening hours and quicker appointments (compared to other SRH providers)	• Convenience was most commonly named as reason why PU used the pharmacy • PU found pharmacies easy to get to from work/home; • Pu found pharmacies accessible as they had long opening hours and there was no need to schedule appointments	*60498 service requests were made between August 2015 and August 2018*	**Convenience of pharmacy-based SRHS**

Checking

Once all findings were listed in the joint display and all pillars had been refined, the third stage (Checking) was conducted as specified by Johnson et al (2017). To check for completeness, accuracy and to ensure that integrated pillars appropriately represented the PhD findings, the joint display was discussed and refined iteratively through deliberation with the research team (H.A. and J.R.). The final version of the joint display was also reviewed by Dr Amy Grove, co-developer of the Pillar Integration Process.

Overarching Pillars

The final stage of the original PIP is the 'Pillar Building'. However, since the pillars had been developed iteratively in the first two stages and had been checked in stage three, this stage was not needed for the adapted PIP. Instead, the pillars were grouped into overarching themes based on the principles of thematic analysis (see section 7.9). The rationale for this was that overarching themes made it easier to keep an overview of all pillars and hence, more easily identify relationships between the pillars. The overarching themes were refined over numerous weeks through deliberation with the research team to ensure robust and justified themes (H.A. and J.R).

9.3. Results of the Data Synthesis

9.3.1. Overview

Section 9.2 introduced the original Pillar Integration Process (PIP) and described how it was adapted to integrate the results from this PhD thesis. This section now presents the integrated findings which were derived from the retrospective quantitative study (chapter 4), the systematic review (chapter 6) and the interview study (chapter 8).

Convergence among the multiple data sources (the systematic review, the retrospective quantitative study and the interview study) was searched. Integrating data from the three data sources was highly valuable as it allowed for the identification of common themes. When data from one data source confirms a pattern from a different data source, the findings are better substantiated (Creswell & Clark, 2017). Grouping all pillars into overarching themes allows the presentation of findings to be more structured and to identify relationships between all pillars.

In total, eighteen different pillars were identified through the synthesis of all PhD findings. The pillars were then grouped into four overarching themes to structure the narrative of integrated findings. Table 21 shows from which study component the individual pillars were derived from.

The listing of the systematic review findings led to the identification of twelve different preliminary pillars. Findings from the interview study matched eleven pillars that had been identified through the listing of the systematic review results. One of the pillars that was identified through the listing of the systematic review results could not be matched with the findings from the interview study. However, two new pillars were identified through the listing of the interview study findings. Next, findings from the retrospective study were added to the joint display. Findings from the retrospective study were found to have the potential to support eight out the fourteen pillars identified through the systematic review and/or the interview study results. Four new pillars were identified through the retrospective study. The complete joint display can be found in Appendix 13.

The overarching themes and pillars which were identified through the adapted Pillar Integration Process (PIP) are illustrated in Figure 14 and presented in following section (section 9.3.2.).

TABLE 21 OVERVIEW OF OVERARCHING THEMES AND PILLARS IDENTIFIED THROUGH THE SYNTHESIS OF ALL FINDINGS

Overview of integrated overarching themes and pillars derived from the data synthesis[3]				
Overarching themes	**Pillars**	**Systematic Review Findings**	**Interview Study Findings**	***Retrospective Study Findings (where applicable/relevant)***
Pharmacy as venue for pharmacy-based SRHS	Convenience of pharmacy-based SRHS			
	Need for trained pharmacy staff			*Not identified*
	Need for physical privacy in the pharmacy			*Not identified*
	Uptake of pharmacy-based SRHS by males		*Not identified*	
	Uptake of pharmacy-based SRHS by ethnicity	*Not identified*	*Not identified*	
	Uptake of pharmacy-based SRHS by age	*Not identified*	*Not identified*	
	Uptake of pharmacy-based SRHS by the day of the week	*Not identified*	*Not identified*	
Implementing SRHS into pharmacies	Pharmacy-based STI testing			
	Pharmacist-assisted contraceptive injection			
	Awareness of pharmacy-based SRHS	*Not identified*		
	Clinical support for pharmacies delivering SRHS	*Not identified*		
Requesting and obtaining SRHS	Pharmacy staff-user interaction			
	Collection and use of personal information			*Not identified*

[3] Dark blue: Theme/Matching theme; light blue: potentially matching theme; grey: no matching/relating theme identified

	Preferences regarding the sex of pharmacy staff			*Not identified*
	Language and communication barriers between pharmacy staff and users			*Not identified*
	Consultation outcomes of pharmacy-based chlamydia treatment and condoms	*Not identified*	*Not identified*	
Impact of delivering SRHS on pharmacy staff	Pharmacy staff workload			
	Pharmacy staff motivation and recognition			*Not identified*

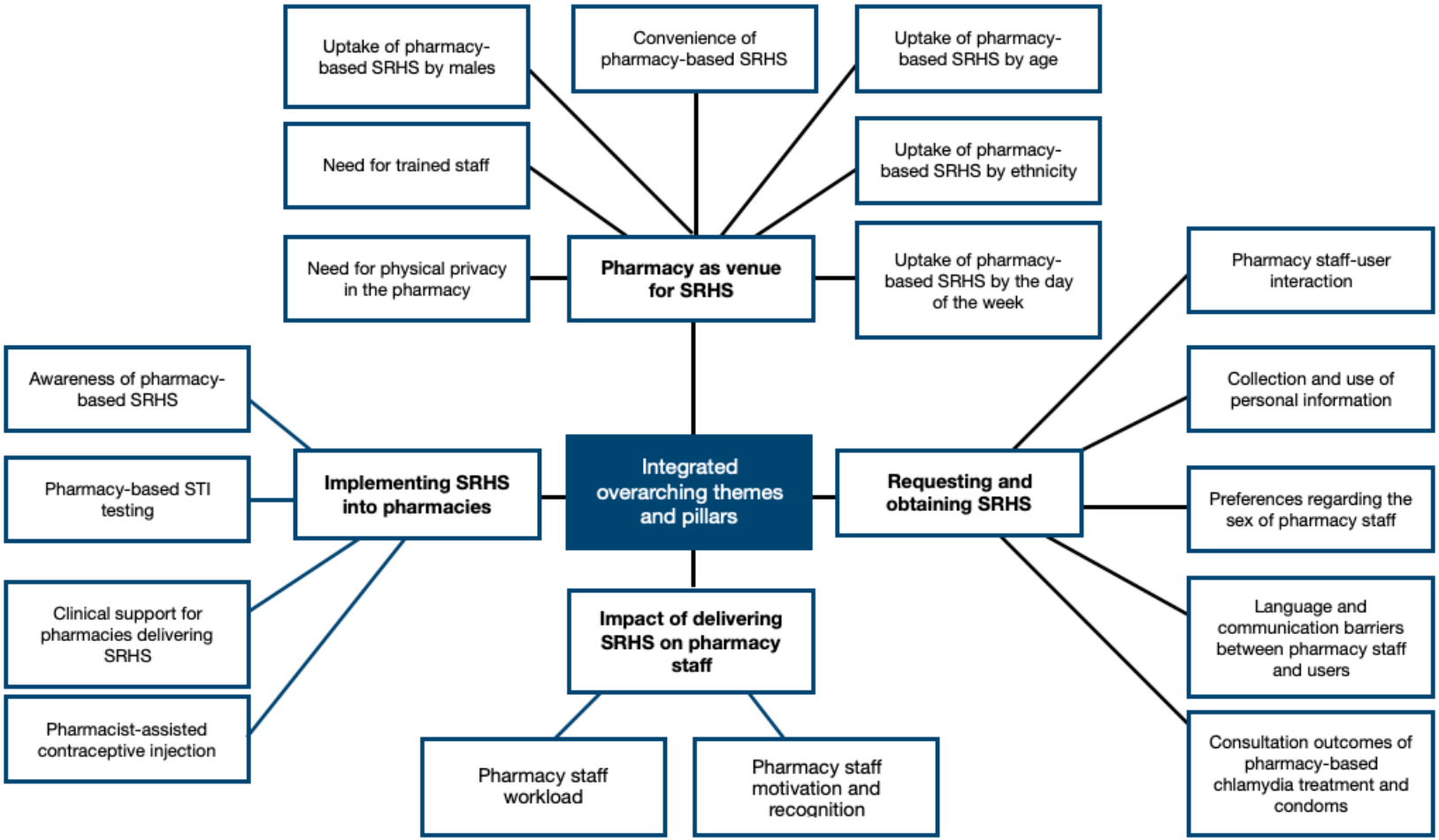

FIGURE 14 INTEGRATED OVERARCHING THEMES AND PILLARS

9.3.2. Pharmacy as a venue for SRHS

Convenience of pharmacy-based SRHS

Both the systematic review and the interview study found that convenience was a key reason for people to use the pharmacy for SRHS. One important aspect that made pharmacies convenient for users was accessibility. Pharmacy users found it easy to get to a pharmacy and liked that they could typically access a pharmacy without having to travel a long distance. Further, pharmacies' long opening hours and quick service delivery were identified as being convenient for pharmacy users. Not having to book an appointment for a SRHS in advance was also reported to be a major advantage of pharmacies over other SRH providers. Being able to attend the pharmacy for several health issues in one visit was perceived as another benefit of using pharmacies for SRHS. Moreover, pharmacy users liked that they could not only get the consultation for the SRHS at the pharmacy but also the required medication or product in a single visit.

The retrospective study showed that there were more than 60,000 pharmacy-based service requests between August 2015 and August 2018. Given that this thesis is the first research of its kind, there were no comparable studies on the uptake of pharmacy-based SRHS elsewhere available to put this number in context. However, this finding could suggest that pharmacy-based SRHS are convenient for many people to use.

Need for trained pharmacy staff

The systematic review and the interview study found that lack of trained pharmacy staff could create a barrier to access. According to the systematic review, pharmacy staff were concerned about not being able to meet the demand for SRHS due to a lack of trained staff. Pharmacy healthcare assistants who participated in the interview study stated that not being able to deliver SRHS to users because no trained pharmacist was available was not only frustrating for them but also upsetting for pharmacy users who were presenting for time sensitive services such as the emergency contraceptive pill. No findings relating to this theme were identified in the retrospective study findings.

Need for physical privacy in the pharmacy

Both the systematic review and the interview study found that physical privacy was a concern when requesting a SRHS at the pharmacy.

According to both the interview study and the systematic review, pharmacy users disliked being surrounded by other clients in the pharmacy. According to the interview study, some pharmacy users waited before entering the pharmacy or attending for a SRHS until the pharmacy was empty because they did not want to be overheard or overseen presenting for a SRHS. Some users stated that they did not want to attend pharmacies where they knew staff or were likely to meet someone they knew.

A study included in the systematic review, which compared people's experiences of privacy at the pharmacy with people's experiences at the clinic, found that pharmacy users were less likely than clinic users to agree that they had experienced an adequate level of privacy.

Relating to this finding, one pharmacy user in the interview study stated that he had experienced less privacy at the pharmacy than at the clinic due to the design of the queuing system. The pharmacy user reported that the pharmacy that he had attended had parallel queues which allowed those pharmacy clients in the queue next to him to overhear what he was presenting for. Another pharmacy user interviewed stated that having a separate counter for SRHS enabled privacy. Hence, the pharmacy design was shown to impact pharmacy users' perception of privacy.

Pharmacy users who participated in the interview study reported that they tried to speak quietly at the counter so that they could not be overheard by other people. Although both the systematic review and the interview study showed that staff were aware that privacy mattered to pharmacy users, instances where pharmacy staff had not been discreet were reported by both pharmacy users and pharmacy staff.

One of the reasons pharmacy users required a high level of privacy was the stigma they associated with receiving SRHS. Users reported that they were scared to be judged by the pharmacy staff and other pharmacy clients. Many users stated feeling embarrassed when requesting a SRHS.

Further, both the systematic review and the interview study showed that consultation rooms provided pharmacy users with sufficient privacy during the consultation on SRHS. The only exception was one pharmacy user who stated that the consultation room at the pharmacy that she had attended had not been soundproof. This negatively impacted her experience of privacy.

No findings from the retrospective study related to the pillar of physical privacy in the pharmacy.

Uptake of pharmacy-based SRHS by males

One study included in the systematic review showed that some pharmacy staff members questioned whether pharmacies were the right place for condom distribution since they were used less by young males. This was corroborated by the retrospective study, which showed that females made up the large majority of pharmacy users, even for condoms and other services (STI self-sampling kits; chlamydia treatment) that were accessible to both men and women. This may suggest that males are indeed less likely to attend for pharmacy-based SRHS compared to females. None of the interview study findings related to this pillar.

Uptake of pharmacy-based SRHS by age

People in the 16-24 age group accounted for more than fifty percent of all SRHS requests. For all services consistently, 16-to 24-year old females and males accounted for the largest number of service requests. The median age across all SRHS was 24 years.

The median age was lowest for users who requested an STI self-sampling kit (median age: 21) and highest in women requesting emergency contraception (median age: 25).

Uptake of pharmacy-based SRHS by ethnicity

According to the available data, White/White British individuals were the largest group who accessed pharmacy services, followed by Asian/Asian British, Black/Black British, Mixed and other ethnic groups.

Uptake of pharmacy-based SRHS by the day of the week

All services except the contraceptive injection and chlamydia treatment were most frequently accessed on Monday, which was the most common day to present in a pharmacy for a SRHS. The uptake of SRHS was lowest on Sunday. Females were most likely to request emergency contraception, condoms and STI self-sampling kits on Mondays, and chlamydia treatment and the contraceptive injection on Wednesday. In contrast, males were most likely to obtain condoms and chlamydia treatment on Fridays and STI self-sampling kits on Tuesdays.

No findings from the systematic review and the interview study related to this pillar.

9.3.3. Requesting and obtaining SRHS

Pharmacy staff-user interaction

Both the systematic review and the interview study showed that pharmacy users generally had a positive experience when interacting with pharmacy staff, who they often described as friendly, supportive and sensitive. Vice versa, pharmacy staff reported that they generally felt comfortable in interacting with pharmacy users.

The systematic review showed that most pharmacy users were comfortable discussing sexual and reproductive health matters with staff, the only exception being some of the young users. Both the systematic review and the interview study showed that pharmacy staff were aware that it was important for them to be confident, friendly and trained. Some pharmacy staff stated that they wanted to have more role playing in their training in order gain more confidence in delivering services.

A smaller number of pharmacy users interviewed had a negative experience with pharmacy staff. Negative experiences were caused by staff who users perceived as judgemental, stigmatising or discriminatory or not confident. One pharmacy user who self-identified as a transgender woman felt discriminated against by staff and suggested that pharmacy staff should receive diversity training to include the use of the correct pronouns when delivering services to transgender people.

The systematic review showed that pharmacy staff were concerned about providing SRHS to minors without parental consent. Further, staff were less likely to deliver emergency contraception to young women or to those who were not in need for emergency contraception themselves (e.g. male partners requesting emergency contraception for a partner).

Studies included in the systematic review compared users' experiences at the pharmacy with users' experiences at the clinic.

These studies showed that pharmacy users perceived their consultation as less comprehensive compared to users of clinical services. Further, pharmacy users were less likely than clinic users to agree that the consultation had helped them to understand the use of emergency contraception better.

Collection and use of personal information

Both the systematic review and the interview study identified problems relating to the collection and use of personal information on pharmacy users.

The systematic review showed that pharmacy staff found it difficult to ask pharmacy users sensitive questions, for example, regarding a user's weight. Further, pharmacy staff who were collecting personal information from pharmacy users on paper felt that the data collection should be digitalised, and less information be collected in order to make pharmacy users more comfortable. While pharmacists in the interviews were recording information electronically, pharmacy healthcare assistants had to collect data on pharmacy users on paper forms. In line with the systematic review, pharmacy staff who participated in the interview study wanted the collection of personal information to be digitalised.

Both the systematic review and the interview study indicated that some pharmacy users were hesitant or did not want to share their personal information. Pharmacists interviewed described that some pharmacy users preferred to buy emergency contraception rather than to obtain it for free through the *Umbrella* service because they did not want to provide their personal information. While some pharmacy users were more willing to provide their data after pharmacists had assured them of the confidentiality of the SRHS, others remained hesitant.

To make the collection of personal data more comfortable for users, pharmacy staff suggested anonymising the collection of personal data as much as possible. Some pharmacists indicated that they were already not asking pharmacy users for their names although they were supposed to.

While some pharmacy staff believed that pharmacy users would not want pharmacies to share their data with other providers of *Umbrella's* services, some pharmacy users wrongly believed that pharmacies were sharing it. These pharmacy users felt that it would be beneficial if pharmacies shared their data with other providers of *Umbrella's* services, as this would mean that they would not have to answer all the questions that they had already answered at a different health provider.

Preferences regarding the sex of pharmacy staff

Both the systematic review and the interview study showed that pharmacy users sometimes had a preference regarding the sex of pharmacy staff delivering SRHS. According to the systematic review, young males did not want to be counselled by female staff whereas women seemed less comfortable being counselled by male staff. In line with this, the interview study also showed that many females preferred to be counselled by female staff.

One female pharmacy user interviewed even stated that she would not attend a pharmacy for a SRHS if there was no female pharmacist available. According to pharmacy staff interviewed, some women presenting for a SRHS specifically asked for a female pharmacist at the pharmacy counter. To overcome pharmacy users' preferences, some pharmacists let their pharmacy healthcare assistants act as chaperones or asked pharmacy healthcare assistants to reassure women that the male pharmacist was friendly and approachable. This strategy was successful in some cases.

Some women interviewed stated that they did not know why they preferred a female pharmacist. However, one male pharmacy user who self-identified as gay stated that he would rather be counselled by a female as he was attracted to men.

Pharmacy staff suggested that there should be more transparency on whether female or male pharmacists were available to deliver SRHS consultations.

Communication and language barriers between pharmacy staff and users

Both the systematic review and the interview study found that pharmacy staff experienced communication and language barriers with pharmacy users who were illiterate or not fluent in English. Although pharmacists who participated in the interview study tried to communicate with pharmacy users via *Google Translate* and *Google Images*, they sometimes had to refer people to the clinic due to communication and language barriers. Both the systematic review and the interview study found that having documents and information sheets available only in English created language barriers. To address this problem, pharmacy staff who were interviewed suggested developing information sheets in different languages. However, some pharmacy staff pointed out that information sheets would not be helpful when delivering services to illiterate people.

No findings from the retrospective study related to this topic.

Consultation outcomes for pharmacy-based chlamydia treatment and condoms

Most people presenting for chlamydia treatment were provided with the antibiotic doxycycline rather than azithromycin. Most people attending for condoms were not provided with condom instructions. No findings from the systematic review and the interview study related to this pillar.

9.3.4. Implementing SRHS into pharmacies

Pharmacy-based STI testing

Both the systematic review and the interview study identified issues related to pharmacy-based STI testing. According to the systematic review, pharmacy users disliked that they had to return their STI samples to designated pathology laboratories, wait for the STI test results and call the hospital during working hours to receive the results. *Umbrella's* pathway of returning STI samples and receiving test results differs from those described in studies included in the systematic review. No issues with the return of samples and receipt of test results were reported in the interview study with *Umbrella's* service users.

However, pharmacy users who participated in the interview study reported difficulties with completing the blood test which was part of the STI self-sampling kits testing for HIV and syphilis. Some pharmacy users therefore did not complete the STI sample or preferred to go to the clinic for STI testing. One dyslexic pharmacy user described difficulties in following the instructions for the STI self-sampling kits.

The retrospective study showed that STI self-sampling kits accounted for 9.6% of all SRHS requests between August 2015 and August 2018. This was despite STI self-sampling being available from all *Umbrella* pharmacies. Possibly, this finding supports the findings from the systematic review and the interviews which suggest that there are barriers for some individuals to pharmacy-based STI testing.

One study included in the systematic review showed that pharmacy users were comfortable with the pharmacist conducting a HIV rapid test and that there was no significant difference in satisfaction between people who got the HIV rapid testing at the pharmacy versus at the clinic. The *Umbrella* service does not offer pharmacist-assisted blood testing. However, pharmacy staff in the interview study were aware that users struggled with obtaining their own blood sample by using a lancet to prick their finger. Pharmacy staff felt that they were well placed to assist with the blood testing and this was welcomed by pharmacy users.

Pharmacist-assisted contraceptive injection

Only one study included in the systematic review gave insight into the delivery of the contraceptive injection in pharmacies. While some users were satisfied with the pharmacist-assisted contraceptive injection, others were concerned about pharmacy staff skills and some users reported that it took the pharmacist several attempts before providing the injection appropriately. Only one pharmacy user was interviewed on her experience of getting the contraceptive injection from an *Umbrella* pharmacy. This pharmacy user reported that getting the injection form the pharmacist was a quick and simple procedure and that she had not felt any pain or discomfort during the injection. The retrospective study showed that the contraceptive injection was the least accessed of *Umbrella's* SRHS.

Awareness for pharmacy-based SRHS

Lack of awareness of SRHS provided in pharmacies was identified to be a barrier to access by both pharmacy users and pharmacy staff.

In particular, pharmacy staff from smaller pharmacies felt that they were being overlooked by people in need of SRHS. Both pharmacy users and pharmacy staff felt that the SRHS should be better advertised.

The interviews with users of *Umbrella's* services showed that even they were uncertain about the full range of services *Umbrella* was offering, where services could be accessed and by whom (in terms of gender and age).

Pharmacy staff described that men sometimes presented for emergency contraception for their female partners although *Umbrella* pharmacies are not giving out emergency contraception to anyone except the person in need of emergency contraception themselves. Pharmacy staff felt that this confusion existed because it was not clearly advertised who could access emergency contraception.

In some cases, even pharmacy staff seemed not to be aware of the eligibility criteria for the SRHS. For example, one pharmacy user interviewed described that she was charged for the emergency contraception in an *Umbrella* pharmacy because the pharmacy healthcare assistant wrongly believed that it was only free for users of a certain age.

Moreover, pharmacy users described difficulties in obtaining information on pharmacy-based SRHS online. They stated that the pharmacy service information on the *Umbrella* website sometimes was not up to date and that it was not always clear whether a service was available from a pharmacy. Pharmacy users therefore called the pharmacy in advance to ensure that the pharmacy was able to deliver the service. In line with this, pharmacy staff also reported that users called in advance to check the service availability.

The retrospective study showed that emergency contraception and condoms were overall the most commonly requested pharmacy-based SRHS. Emergency contraception and condoms have been available from pharmacies for a long period of time. Possibly, those services have been requested more in comparison to other services (such as for example contraceptive injection and chlamydia treatment) because people are more aware that they are available from pharmacies.

The systematic review did not have any findings relating to this pillar.

Clinical support for pharmacies delivering SRHS

Pharmacists interviewed felt that pharmacies did not get sufficient support from the sexual health clinic collaborating with *Umbrella* pharmacies. For example, while pharmacists appreciated having a clinical support line, they experienced difficulties accessing the line for help.

Further, pharmacists complained that there were not sufficient clinical appointments available for women wishing to get a copper coil referral or appointment as emergency contraception and that those appointments that were available did not always suit pharmacy users.

The retrospective study showed that the majority of women presenting for emergency contraception were provided with an emergency contraceptive pill. Less than one percent of women presenting for emergency contraception were provided with a copper coil appointment or referral. The low percentage of copper coil appointments may be an indicator for an insufficient number of clinical appointments.

However, it is also possible that women were not interested in getting the copper coil or were not offered the copper coil as emergency contraception by pharmacy staff.

Pharmacists felt that it was impractical that they had to call the clinic to schedule an appointment for the copper coil and some pharmacy staff members wanted to have direct access to the clinical appointment system.

No findings from the systematic review related to this pillar.

9.3.5. Impact of delivering SRHS on pharmacy staff

Pharmacy staff workload

Both the systematic review and the qualitative study showed that the delivery of SRHS affected pharmacy staff workload.

Whether workload was perceived as a burden for staff was found to be related to several factors. First of all, pharmacists were found to be more affected by added workload than pharmacy healthcare assistants. Further, the burden of workload was dependent on the demand of SRHS. The systematic review showed that pharmacy staff found it more difficult to deliver services at times such as the weekend or evenings where demand was higher. Some pharmacy staff felt pressure from some pharmacy users to deliver services quickly rather than thoroughly.

Pharmacy staff described that it was sometimes challenging to deliver SRHS in addition to all the other tasks that needed to be completed due to time pressure. They therefore often had to multitask during the delivery of SRHS. Pharmacy users reported that this multitasking impacted negatively on their experience of the consultation.

It was found that time pressure was not related to the number of SRHS offered in the pharmacy (Tier 1 or Tier 2 services), rather it was related to the level of staffing in the pharmacy. Pharmacists who worked at pharmacies with lower staffing levels were more likely to experience the workload related to SRHS as difficult or stressful than those pharmacists working in pharmacies were several pharmacists and pharmacy healthcare assistants were employed. One pharmacist interviewed stated that low staffing levels were the reason why his pharmacy could not deliver the extended range of services (Tier 2 services).

Those pharmacists who were working alone found it particularly difficult to provide services as there was no one to cover the pharmacy counter during the consultation on a SRHS. While pharmacy staff felt that having more staff members would take pressure from staff, they believed that this was not likely to happen due to financial constraints. To reduce pressure on pharmacists, some pharmacy staff members suggested that some tasks could be shifted to pharmacy healthcare assistants. However, some pharmacists felt that pharmacy healthcare assistants were not paid enough and were underqualified to deliver a larger range of SRHS. However, pharmacy healthcare assistants themselves were largely willing to take on a bigger role.

Pharmacy staff collectively agreed that it would take pressure off the pharmacist if pharmacy healthcare assistants could electronically enter data collected on pharmacy users. This would prevent pharmacists from having to enter data collected by pharmacy healthcare assistants on paper onto the PharmOutcomes® software package. According to pharmacy healthcare assistants, some pharmacists were already letting them enter data on the electronic platform PharmOutcomes®, although they were not supposed to.

Pharmacists also felt that the collection of personal information on pharmacy users should be reduced. One pharmacist suggested that pharmacy users should be allowed to pre-register themselves in advance of the consultation. In his opinion, this would not only shorten the consultation, but also allow pharmacists to explore pharmacy users' health needs in the consultation and provide pharmacy users with more reassurance.

No retrospective study findings were identified to relate to this pillar.

Pharmacy staff motivation and recognition

Both the systematic review and the interview study found that pharmacy staff were willing to take on extra workload to deliver SRHS. Pharmacy staff were motivated to provide SRHS as they believed that this contributed to freeing up doctors' time and removing pressure from the healthcare system. Further, they enjoyed increasing access to SRHS, helping people and contributing to the reduction of unwanted pregnancy. Pharmacy staff also found that delivering the services enhanced their profession, increased their employability and aided them in developing their professional role as primary health care providers.

Both the systematic review and the interview study found that pharmacy healthcare assistants wanted financial recognition for working beyond their traditional role. According to the systematic review, pharmacy healthcare assistants wanted financial recognition for their added workload, although pharmacy healthcare assistants that took part in the interview study indicated that they would expect to be paid for the time they spent getting trained on the delivery of SRHS but not for delivering the extra services.

The interview study also showed that pharmacy healthcare assistants felt that pharmacy users did not perceive them as healthcare professionals and did not trust them to deliver services as much as they trusted the pharmacist.

However, some pharmacy healthcare assistants reported that wearing the *Umbrella* badge made them more approachable to pharmacy users as it showed that they could be asked for advice on SRHS. Pharmacists felt that pharmacy users did trust them and although this was supported by interviews with the majority of pharmacy users, one pharmacy user pointed out that the pharmacist's qualifications displayed in the consultation room reassured her that the pharmacist was qualified for the delivery of SRHS. This need to be reassured of the pharmacists' qualifications possibly suggests that some users did not initially trust pharmacists to deliver SRHS.

Both pharmacists and pharmacy healthcare assistants felt that they should get more recognition for working beyond their traditional role from the health provider *Umbrella*. For example, they wanted to be asked for feedback and be involved in decisions regarding the delivery of pharmacy-based SRHS. However, one pharmacist pointed out that an annual award event for pharmacy staff provided some sense of recognition.

No findings from the retrospective study related to this topic.

9.4. Strengths and limitations of the data synthesis methods

The data synthesis was based on the Pillar Integration Process (PIP), a method that has been published in a peer reviewed journal (R. E. Johnson et al., 2017). A strength of the PIP is that it is flexible in its ability to synthesise findings from different study designs (R. E. Johnson et al., 2017), making it well suited to this thesis' mixed methods approach. Another strength of the PIP is that clear steps are outlined which makes the data integration transparent and systematic. However, a limitation of the original PIP approach is that the stages described are only provided for the synthesis of two datasets. This limitation was addressed by the PhD candidate, as she adapted the PIP to allow for the integration of findings from three different data sources (the systematic review, the retrospective quantitative study, the interview study). In order to provide the reader with an understanding of the process and the findings, it was clearly described how and why the different PIP stages were adapted, increasing the reliability of the adapted PIP. The method used to integrate findings for this thesis was discussed with one of the co-developers of the original PIP to ensure that the adaption of the model was appropriate.

However, there were also some limitations regarding the data synthesis. First, as shown in section 6.4, almost half of the studies included in the systematic review were not of high quality or at least not reported as being of high-quality. This may not only affect the quality of the systematic review results but also the quality of the integrated findings. It is important to view the findings in light of this.

There is also a risk that the data synthesis oversimplifies the level of convergence occurring across different studies, and in some cases may force data together which in reality does not match (Fitzpatrick, 2014). This may be true particularly for the retrospective study, which was not conducted to explore pharmacy staff and pharmacy users' experiences but to describe the utilisation of pharmacy-based SRHS.

It is therefore questionable whether the findings from the retrospective study can truly make sense of the systematic review and interview study findings, and so the interpretation needs to be viewed with caution.

However, research using different study methodologies can result in more reliable findings than research using a single method (Dabae Lee, 2018). Comparing and contrasting the results of the three different studies allowed a more sophisticated understanding of all the findings generated from this thesis. It was shown that there were several patterns between the three studies, which strengthens the key thesis findings.

9.5. Chapter summary

This chapter described the methods used to synthesise the findings from this PhD thesis. The Pillar Integration Process, a method to integrate findings from different study designs, was adapted to synthesise the results from the systematic review, the interview study and the retrospective study. Following this, the results from the integration of all the findings were presented. Eighteen pillars were identified and grouped into four overarching themes: 1. Pharmacy as a venue for SRHS (need for physical privacy in the pharmacy; availability of trained staff; uptake of pharmacy-based SRHS by males; convenience of pharmacy-based SRHS; uptake of pharmacy-based SRHS by age; uptake of pharmacy-based SRHS by ethnicity; uptake of pharmacy-based SRHS by the day of the week), 2. Requesting and obtaining SRHS (pharmacy staff-user interaction; collection and use of personal information; preference regarding the sex of pharmacy staff; language and communication barriers between pharmacy staff and users), 3. Impact of delivering SRHS on pharmacy staff (pharmacy staff workload; pharmacy staff motivation and recognition) and 4. Implementing SRHS into pharmacies (awareness of pharmacy-based SRHS; pharmacy-based STI testing; clinical support for pharmacies delivering SRHS; pharmacist-assisted contraceptive injection). The following and final chapter of the thesis offers a discussion of the integrated findings.

10. Discussion, Recommendations & Conclusion

10.1. Chapter overview

This thesis focused on pharmacy-based sexual and reproductive health services (SRHS). To address the overall aim of the thesis, which was to develop recommendations for the service optimisation of pharmacy-based sexual and reproductive health services in England (UK), two approaches were taken: (1) service utilisation was described, and (2) pharmacy staff and pharmacy users' experiences and attitudes were explored.

Routinely collected data from *Umbrella*, a sexual health provider in Birmingham (England), was analysed for the time period August 2015 to August 2018 to describe the utilisation of SRHS. It was the first study to analyse service utilisation across a wide range of SRHS.

To explore users' and staff experiences and attitudes of pharmacy-based SRHS, two studies were conducted. Using a systematic review, existing evidence on users' and staff experiences and attitudes of pharmacy-based SRHS were summarised. The systematic review revealed that there was limited (high quality) qualitative research (from England) exploring staff and particularly pharmacy users' experiences of pharmacy-based SRHS. It also showed that research capturing pharmacy healthcare assistants' experiences on delivering SRHS was limited and that for some pharmacy-based SRHS (e.g. chlamydia treatment) no evidence on users' or staff experiences was available. Hence, it was highly important and timely to conduct a qualitative study exploring users' and staff experiences in-depth. Based on the findings of the review and the retrospective study, semi-structured interviews with pharmacists, pharmacy healthcare assistants and pharmacy users were conducted in Birmingham (England), where the pharmacy service *Umbrella* delivers a wide range of services related to contraception and sexually transmitted infections across multiple pharmacies.

The results from all three studies were first analysed and discussed separately and then synthesised using an adapted version of the Pillar Integration Process (R. E. Johnson et al., 2017) in the previous chapter (chapter 9).

In this chapter, the integrated findings derived from the data synthesis are now summarised and discussed using the four overarching themes presented in section 9.3. Based on this discussion, recommendations for service optimisation are developed to complete the final objective of this thesis which was to "synthesise all findings to develop recommendations for service optimisation". An overview of all recommendations is provided in section 10.6. Following this, the key strengths and weaknesses of this PhD thesis are discussed (see 10.7). In section 10.8, the dissemination plan for the findings and recommendations is presented. The chapter ends with the conclusion, which highlights the key contributions of this thesis (see section 10.9).

10.2. Pharmacy as venue for SRHS

10.2.1. Convenience of pharmacy-based SRHS

Both the systematic review and the interview study found that convenience was the key reason for service users to access SRHS via a pharmacy. Pharmacy users felt that it was easy to get to the pharmacy without having to travel a long distance. Further, pharmacy users liked that they did not have to schedule an appointment for a pharmacy-based SRHS in advance, that the service delivery was quick and that the pharmacies had long opening times. Moreover, being able to attend for several health services at one visit and the possibility to get both the consultation and the SRH product or medication from the pharmacy were features perceived as convenient by pharmacy users.

These findings are in line with previous systematic reviews on pharmacy-based sexual and reproductive health services (Gonsalves & Hindin, 2017) and other extended pharmacy services (Ali M.K. Hindi et al., 2018). This would suggest that convenience is not only important to people seeking sexual and reproductive health services but for users of pharmacy services in general. It can therefore be recommended that pharmacies should maintain features, such as walk-in services and long opening times, which were found to be perceived as convenient. However, a recent study showed that the introduction of an appointment system to provide vaccinations in the pharmacy led to a higher overall rate of vaccinations per pharmacy store compared to pharmacies without appointments and that pharmacy users and staff appreciated having dedicated time to discuss vaccinations (Luder et al., 2018). While appointment-based systems may be appropriate for pharmacy services such as vaccinations, which can be planned in advance, services such as the emergency contraception don't lend themselves to an appointment-based system as women do not typically plan using emergency contraception in advance but request it after 'emergencies' such as contraceptive failure. As access to emergency contraception is highly time-sensitive it is important for pharmacies and sexual health providers to offer walk-in services.

Not having to schedule appointments was found to be a key advantage over other health providers in this thesis. Keeping walk-in services and long opening times can therefore be considered as an important key pharmacy attribute compared to some other health providers (see Table 22).

TABLE 22 RECOMMENDATIONS RELATING TO CONVENIENCE OF PHARMACY-BASED SRHS

Addressee of Recommendation(s)	Recommendation(s) relating to convenience of pharmacy-based SRHS
Practice	• Pharmacies should continue to offer walk-in consultations and long opening hours as convenience is perceived as a key strength of pharmacies

10.2.2. Need for physical privacy in the pharmacy

Both the systematic review and the interview study showed that many pharmacy users felt that privacy was insufficiently addressed when requesting a SRHS. A major concern identified for pharmacy users was to be overheard or seen presenting for a SRHS. While some pharmacy users did not want to have anyone physically around them when requesting a SRHS, others were more concerned about requesting a SRHS at a pharmacy where they knew pharmacy staff or other pharmacy clients. Some pharmacy users waited outside or inside the pharmacy until it was quiet before approaching pharmacy staff for a SRHS, while others tried to whisper at the counter in order not to be overheard. Pharmacy users' experience of privacy was negatively impacted if pharmacy staff were not discreet when discussing or delivering a service.

Next to indiscreet staff, parallel queuing systems in the pharmacy caused negative experiences of privacy as pharmacy clients in the parallel queue could overhear what was being discussed. In contrast, pharmacy counters located in a separate area of the pharmacy appeared to improve pharmacy users' experience of privacy. With regards to the service delivery, the consultation room was found to provide sufficient privacy according to almost all pharmacy staff and pharmacy users.

There is agreement in the wider literature that a lack of privacy when requesting a service is also a concern for users of pharmacy services other than SRHS (Bednarczyk et al., 2010; Hendrika Laetitia Hattingh et al., 2015; Ali M.K. Hindi et al., 2018; Krska & Mackridge, 2014; D. C. Stewart et al., 2011; J. Taylor et al., 2012; Tucker & Stewart, 2015; K. Wood et al., 2015). Hence, privacy is not only a concern for users of SRHS but users of various pharmacy services, although it might be a particular concern when discussing topics relating to sexual health.

Indiscreetness of pharmacy staff has also been identified to be an issue in a previous study (Hendrika Laetitia Hattingh et al., 2015). The authors of this study suggested that better staff training concerning the importance of privacy and confidentiality was needed and the findings of this thesis support this recommendation (Hendrika Laetitia Hattingh et al., 2015). It may also be important to monitor or audit whether staff training on the delivery of SRHS, including training on discreetness, has been effective, for example through mystery shoppers organised by service commissioners (Moriarty et al., 2003).

Since 2005, pharmacies increasingly have private consultation rooms available (Rapport et al., 2009). In line with previous research (Hendrika Laetitia Hattingh et al., 2015), this thesis found that consultation rooms provided privacy during the service delivery. Having a consultation room in pharmacies has also been found to be associated with higher sales of incontinence and asthma products (Pike, 2007). This suggests that advertising the availability of consultation rooms may enable access to a broad range of pharmacy services, and so may be financially beneficial for pharmacies. However, one pharmacy user interviewed as part of this PhD project complained that the pharmacy consultation room was not soundproof.

According to the guidance from NHS England, it should not be possible to be overheard in the pharmacy consultation room when speaking at a normal volume (NHS England, 2019). Pharmacies should ensure that their consultation rooms are in line with this guidance to ensure that pharmacy users can discuss their health concerns in privacy. While consultation rooms appear to be enablers to pharmacy access, participants in a previous study found that being asked into the consultation room by pharmacy staff was singling them out from other clients and contributed to a feeling of embarrassment and stigma (Hendrika Laetitia Hattingh et al., 2015). This suggests that consultation rooms are not the total solution to create sufficient comfort and privacy in the pharmacy.

Research on design solutions to enable privacy is limited despite many publications showing that a lack of privacy is a concern to pharmacy users. Participants in a recent study which aimed to explore pharmacy design suggested having a phone booth inside the pharmacy from which pharmacy users could call the pharmacist to speak in private (Reddy et al., 2019). However, if the phone booth is an optional choice, pharmacy users may still feel singled out entering the phone booth to talk to the pharmacist. It may therefore be better to create equal privacy for all pharmacy users.

When developing solutions to address privacy in the pharmacy, the occurrence of pandemics such as the current (as of July 2020) COVID-19 pandemic, should be considered. A recently published COVID-19 guideline for pharmacy teams recommends to maintaining a 1-m distance to the pharmacy client (Bukhari et al., 2020). Having to maintain this distance, is likely to make it more difficult to be discreet as staff and users may have to speak louder to communicate with each other, especially when wearing face masks. Further, NHS England does not have any minimum requirements regarding the size of consultation rooms (Buisson, 2005). It may therefore be possible that some pharmacies are currently not able to utilise their consultation rooms due to a lack of space. Not being able to share their health concerns and not receive treatment as a result of a lack of privacy in the pharmacy may have negative consequences on people's health. Guidance on how to deliver services in privacy, especially during times of pandemics such as COVID-19, are therefore urgently needed.

The challenge of providing guidance on how to deliver pharmacy services privately is further complicated by large variations in the available space and configuration of pharmacies. Further required changes to ensure more privacy may lead to increased costs for pharmacies, which they may not be able to afford. Hence, more research on innovative and cost-effective solutions to address privacy in pharmacies which have different layouts is highly important to ensure that pharmacy users can safely and privately share their concerns with pharmacy staff. An overview of the recommendations relating to physical privacy are provided in Table 23.

TABLE 23 RECOMMENDATIONS RELATING TO NEED FOR PHYSICAL PRIVACY IN THE PHARMACY

Addressee of Recommendation(s)	Recommendation(s) relating to need for physical privacy in the pharmacy
Practice	• Pharmacies should ensure that their consultation rooms meet the privacy requirements by NHS England, e.g. in terms of being soundproof • More effective training for pharmacy staff on the importance of the discreet delivery of services is needed; • Monitoring of adherence to guidelines and training relating to privacy is needed
Policymakers	• NHS England should provide guidelines on how to deliver pharmacy-based SRHS while ensuring privacy, including during pandemics such as COVID-19
Research	• Future research should explore innovative and cost-effective solutions to provide privacy to pharmacy clients

10.2.3. Need for trained pharmacy staff

In both the systematic review and the interview study, a lack of availability of trained staff was identified to be a barrier to pharmacy-based SRHS. Not being able to deliver services because no trained pharmacist was available was frustrating and concerning for pharmacy staff and upsetting for pharmacy users presenting for time-sensitive services such as emergency contraception.

In line with this finding, a recent systematic review from the US found that the absence of a trained pharmacist was a barrier to receiving emergency contraception (Moore et al., 2019). Several studies have identified barriers to pharmacy staff training. These included time constraints, lack of funding, having to travel to training and lack of relevant local training courses (Braund et al., 2018; Smith & Watson, 2004). For locum pharmacists (those who are employed through an agency and choose their own hours and pay) not working enough hours in the pharmacy to make the training worthwhile was also cited as barrier (Braund et al., 2018). However, in Braund et al.'s study, reasons such as not believing that pharmacies were appropriate to deliver sildenafil (medication for erectile dysfunction) were barriers to training (2018). Female staff in the study were also concerned about the sensitivity of the topic and preferred male pharmacist to deliver the service on erectile dysfunction (Braund et al., 2018). Hence, possibly staff attitudes towards specific services may be a barrier to deliver sensitive services such as SRHS.

To increase uptake of training, barriers need to be removed. Umbrella is already partly providing training on sexual and reproductive health services online. Possibly, if full training was available in the form of an online course, this may make training more accessible for pharmacy staff as they could get trained in their own time. It may also reduce training costs in the long-term as no costs for travelling, the training location, the hiring of an educator or refreshments need to be paid. However, online courses and online tests have to be set up and content updated regularly. Online training would also make it more difficult to practice consultations skills in role plays. How to overcome barriers to training while ensuring its quality and effectiveness should be further explored in future research.

As there is only limited evidence showing how frequently services are unavailable due to lack of trained staff, more research is needed to explore the impact of this factor.

Being sent away because no trained pharmacist is available is evidently upsetting for pharmacy users. Pharmacies should therefore try to ensure that all their pharmacists, including locum pharmacists, are trained on the delivery of SRHS. Further, pharmacies should be able to refer users presenting for SRHS to other SRH providers when no pharmacist is available. *Umbrella* has had mechanisms and training for referrals between *Umbrella* pharmacies in place since 2015. However, whether *Umbrella* pharmacies are making use of them in practice has not been explored yet and should be monitored or audited regularly to ensure pharmacy users get the healthcare they need. In cases where pharmacies can foresee at which times trained staff are available in the pharmacy, this information should be made accessible to pharmacy users, e.g. on their respective websites. An overview of the recommendations relating to the availability of trained pharmacy staff is provided in Table 24.

TABLE 24 RECOMMENDATIONS RELATING TO THE NEED FOR TRAINED PHARMACY STAFF

Addressee of Recommendation(s)	Recommendation(s) relating to the need for trained pharmacy staff
Practice	• Pharmacies should ensure that there are trained staff available at all times or ensure that there is information available for pharmacy users to check when trained staff are available • Pharmacies should have referral plan in place to ensure that pharmacy users can be directed to another health provider if no pharmacy staff are available
Research	• Future research should explore the impact of not having trained staff available and reasons for staff not to obtain training • Future research should explore how to overcome barriers to training

10.2.4. Uptake of pharmacy-based SRHS by males

In the systematic review, some pharmacy staff questioned whether pharmacies were well placed to deliver condoms. They felt that pharmacies were not frequently visited by young males. The retrospective study showed that males attended those pharmacy-based SRHS that were accessible to both sexes less frequently than females. The gap in attendance by gender can be explained by a range of factors. Linking to the topic "preferences regarding the sex of pharmacy staff"(described in section 9.3.3), the difference in attendance by gender may be partially explained by pharmacy counter staff being predominantly female (Schafheutle et al., 2008) and many males not wanting to approach females to discuss issues relating to sexual and reproductive health. However, research has shown that males are less likely to attend healthcare in general (Galdas et al., 2005). With regards to sexual and reproductive health services, males are also less likely than females to take part in STI testing (Banerjee et al., 2018; Götz et al., 2005; Goulet et al., 2010; Kong et al., 2011; Macleod et al., 2005; Novak & Karlsson, 2006; Paudyal et al., 2015; Williamson et al., 2007).

Hence, the low uptake of pharmacy-based SRHS by men is likely not to be specific to this setting. Research has started to explore why men are engaging less in SRHS. Deficits in knowledge about SRHS has been shown to be a barrier to young men accessing services (Bersamin et al., 2017). Further, a study from Australia showed that stigma and discrimination, and concerns about privacy and anonymity were barriers for gay men to access sexual and reproductive health services (T. Lea et al., 2019). Linking to the topic of "need for physical privacy in the pharmacy" (described in section 9.3.2), improving privacy and anonymity may increase the service uptake of males. Linking to the topic of awareness (described in section 9.3.4), raising awareness and increasing advertisement of SRHS may also encourage men to attend SRHS. In line with this, a recent study has shown that advertising campaigns can increase STI testing amongst males in a university setting (E. A. Anderson et al., 2016). Further, one study from America found that multilevel interventions such as staff training, clinic environmental changes (e.g. incorporating male-appropriate brochures etc), in-reach (encouraging male partners, friends, relatives about reproductive health services), outreach (promoting available male reproductive health services in community-based organisations), and efficiency assessment (e.g. reducing waiting times), increased male client volume and STI testing in family planning clinics (Fine et al., 2017). A study from South Africa found that establishing specific men's clinics can increase engagement in HIV services (Lekhotsa et al., 2018). There is also an ongoing randomised controlled trial exploring whether using mobile apps can increase STI screening uptake by males (Teo et al., 2019), although the findings from the trial have not yet been published.

Hence, there is research indicating that male engagement in SRHS can be increased. Currently, there are limited data on the uptake of various SRHS from pharmacies in men. Future studies should compare the uptake of services in different settings (e.g. General Practices, sexual health clinics and pharmacies) by gender to better understand how the different settings contribute to reaching males. There is currently no research exploring barriers to pharmacy access by males. This should be considered for future research. Recommendations relating to the uptake of pharmacy-based SRHS by males are summarised in Table 25.

TABLE 25 RECOMMENDATION(S) RELATING TO THE UPTAKE OF PHARMACY-BASED SRHS BY MALES

Addressee of Recommendation(s)	Recommendation(s) relating to the uptake of pharmacy-based SRHS by males
Practice	• Pharmacies should try to improve privacy as this may increase the uptake of males • Health providers should use multilevel interventions to increase the uptake of males
Research	• Research should explore barriers to pharmacy-based SRHS for males • Research should compare the uptake of services by different sexual and reproductive health providers (e.g. pharmacies, clinics and General Practices) and by gender

10.3. Requesting and obtaining SRHS

10.3.1. Language and communication barriers between pharmacy staff and users

The systematic review and the interview study showed that pharmacy users' inability to read, write or speak fluent English can create a barrier to pharmacy-based SRHS. Pharmacy staff were trying to explain services using *Google Images* and *Google Translate*. However, in some cases where pharmacy staff were unable to communicate information on SRHS, users needed to be referred to the sexual health clinic (Whittall Street Clinic, Birmingham). Not having documents such as information sheets in languages other than English was perceived as a barrier to service delivery by pharmacy staff. However, some pharmacy staff identified that information sheets were also not helpful with users who spoke English but were illiterate.

Not being able to communicate with non-English speakers was also found to be a problem in several other studies evaluating a variety of pharmacy services in English speaking countries (Bellamy et al., 2017, 2019; Bradshaw et al., 2007; Chang et al., 2011; Cleland et al., 2012; Devraj & Young, 2017; Fejzic & Barker, 2019). A study from New Zealand gave an insight into the frequency that pharmacy staff were dealing with non-English speakers (Chang et al., 2011). It was found that at least 65% of pharmacists included in the study counselled non-English speakers at least once a week (Chang et al., 2011). Strategies to address language barriers in this study included hiring bilingual staff and using translated information sheets (Chang et al., 2011). While none of the pharmacies reported using professional translating services (Chang et al., 2011), the majority of pharmacy staff stated that they would like to have access to telephone interpreting services (Chang et al., 2011).

In another study from the US, language-assistance telephone lines were perceived to be easier to use and more helpful in comparison to paper-based resources and bilingual personnel (Devraj & Young, 2017). Telephone translating services were also found to be beneficial in another study (Bradshaw et al., 2007). Pharmacies in Australia have access to Australia's Translating and Interpreting Service, a service which provides access to phone and on-site interpreting services in over 150 languages (Fejzic & Barker, 2019). Introducing access to translating and interpreting services for pharmacy staff should also be considered by policymakers in England in order to overcome communication barriers. However, this would not solve communication problems with deaf pharmacy users. Recent research has shown that it is difficult to deliver services to deaf pharmacy users for whom written material was identified to be crucial (M. C. Ferguson & Shan, 2016).

Language and communication barriers are not only unique to pharmacy-based SRHS but apply to pharmacy services in general. There is consistent international evidence on the risks of language barriers to impact on quality of care and patient safety (De Moissac & Bowen, 2019). It is therefore important to explore solutions which address communication barriers.

Translation telephone services may be feasible to address problems when communicating with non-English speakers. However, this will not be effective when communicating to deaf people. Having materials in different languages in addition to translating services may be effective in addressing language and communication needs.

According to the latest census data, 2.4% of Birmingham's population aged three years or more do not speak English well or at all (Birmingham City Council, 2013). This was more than twice the national average. Hence, language and communication barriers in pharmacies are likely to be more prevalent in areas with a higher proportion of people who do not speak the national language.

A summary of the recommendations relating to language and communication barriers between pharmacy staff and users is provided in Table 26.

TABLE 26 RECOMMENDATIONS RELATING TO LANGUAGE AND COMMUNICATION BARRIERS BETWEEN PHARMACY STAFF AND USERS

Addressee of Recommendation(s)	Recommendation(s) relating to language and communication barriers between pharmacy staff and users
Practice	• Pharmacies should consider providing access to translation services/ translated material for services
Policymakers	• Policymakers in England should consider of establishing a translating service following the Australian Translating and Interpreting services
Research	• Future research should explore solutions to address language barriers (e.g. translating services, resources translated in several languages)

10.3.2. Preferences regarding the sex of pharmacy staff

Both the systematic review and the interview study showed that many pharmacy users have a preference regarding the sex of pharmacy staff delivering SRHS. Most female pharmacy users seemed to prefer being counselled by someone of the same sex. One male pharmacy user who self-identified as homosexual, stated that he would prefer to be counselled by a woman as he was attracted to males. For some women, not being able to be counselled by a female pharmacist was a barrier to access. Some pharmacy staff in our interview study stated that they offered female pharmacy users a female healthcare assistant chaperone when only a male pharmacist was available for the consultation.

In line with the PhD findings, previous research has shown that females generally prefer to be seen by a female healthcare professional (Makam et al., 2010; Schmittdiel et al., 2000; Stanford et al., 2017). However, as shown by Schmittdiel et al. being seen by a healthcare professional of the preferred sex is not necessarily associated with higher satisfaction (2000). In fact, those women who took part in the study and chose a female doctor were the least satisfied with their experience (Schmittdiel et al., 2000). Reasons for this were, however, not reported.

Research has shown that being chaperoned is preferred by some but not all patients and that patients want to be involved in the decision whether or not to be chaperoned (Baber et al., 2007). Pharmacies could consider asking pharmacy users whether they would prefer to speak to a male or female pharmacist (where both are available) or would like to be chaperoned by a pharmacy healthcare assistant (where available). However, this would be an additional cost for the pharmacy as a member of staff needed for chaperoning consultations cannot cover the sales counter at the same time. Further, since pharmacy healthcare assistants are more likely to be female (Schafheutle et al., 2008), it is more difficult to provide a male chaperone for men who want to be chaperoned by a someone of the same sex. However, research has shown that men are less likely to have a preference regarding the sex of staff than females and are less willing to be chaperoned (Baber et al., 2007; Stanford et al., 2017). To date, there is no literature on chaperoning in pharmacies. Future research should explore pharmacy users' and staff attitudes towards introducing chaperoning in the pharmacy. Further, where possible, pharmacies should consider providing information online on whether female or male pharmacy staff is available and at which times. This would help pharmacy users to attend those pharmacies where they feel more comfortable to be delivered with SRHS.

That homosexual people prefer to be counselled by health care professionals of the opposite sex has also been found in previous research where a physical examination was required (Poria et al., 2019). The PhD findings suggest, however, that sex of staff not only matters where a physical examination is being performed but also when only a consultation is provided. Since, the PhD findings are based on a relatively small number of interviews, this has to be interpreted with caution and needs further exploration.

Table 27 provides an overview of all recommendations relating to preferences regarding the sex of pharmacy staff.

TABLE 27 RECOMMENDATIONS RELATING TO PREFERENCES REGARDING THE SEX OF PHARMACY STAFF

Addressee of Recommendation(s)	Recommendation(s) relating to preferences regarding the sex of pharmacy staff
Practice	• Pharmacies should ask users whether they want to talk to a male or female pharmacist and could consider letting pharmacy healthcare assistants chaperone consultations if preferred by the pharmacy user; Pharmacies should also make information available online on whether and when female/male pharmacists are available
Research	• Future research should explore pharmacy users' and pharmacy staff attitudes towards introducing chaperoning for the delivery of sexual and reproductive health services • Future research should also explore pharmacy users' preferences with regards to the sex of pharmacy staff delivering SRHS

10.3.3. Pharmacy staff user-interaction

Both the systematic review and the interview study found that both staff and users perceived the interaction between them as largely positive. Most pharmacy users found that staff provided appropriate advice, were friendly, professional and polite. However, according to the systematic review, users perceived pharmacy consultations as less informative than clinic consultations. The systematic review also showed that users' characteristics such as age influenced pharmacy staff willingness to offer services such as STI self-sampling kits and emergency contraception. A few pharmacy users in the interview study detailed negative experiences with pharmacy staff. These experiences were caused by staff lacking confidence, or being judgemental, discriminatory or disrespectful of users' choices. According to the retrospective study, only a small number of people self-identifying as transgender accessed the services, suggesting that this group may face barriers to access or prefers to access other services available to them. For example, *Umbrella* has set up the first commissioned Trans Clinic in the country, in Birmingham (Umbrella, 2019) and possibly transgender people prefer accessing a clinic targeted to their needs over pharmacies.

Further, it is also possible that transgender people were not captured in the data as only gender and not sex was recorded. Health providers should consider collecting both, details on the sex and gender to ensure that transgender people are identified in the dataset.

One transgender woman who participated in the interview study stated that pharmacy staff should be trained in delivering services to transgender people, including the correct use of pronouns. In the UK, the pharmacy curriculum is firmly based on the European required syllabus (Sosabowski & Gard, 2008) and education on transgender care is currently not part of the pharmacy curriculum and training for pharmacy staff (Knockel et al., 2019). Since pharmacies are likely to be accessed by diverse populations, including transgender people, diversity training may be worth considering integrating into the pharmacy curriculum.

The interaction between pharmacy staff and pharmacy users has also been identified as generally satisfying in previous research at another pharmacy service (Morrissey, 2017). However, as the systematic review showed, there is little research comparing experiences of pharmacy-based SRHS with the delivery of SRHS in clinics or General Practices. Further research on this should be conducted with large and diverse samples.

The interview study showed that judgement of a user's choices by pharmacy staff negatively impacted pharmacy users' experiences. Judgement from healthcare professionals has also been found to be a concern for patients in different settings and services such as mental health services (Brooks et al., 2017). In contrast, non-judgemental attitudes were found to be associated with patients feeling reassured and cared for (N. Ferguson et al., 2019). Judgemental attitudes instead can lead to difficulty in providing emotional and psychological care for patients (Jittitaworn et al., 2020) and result in negative patient experiences (N. Ferguson et al., 2019).

The importance of non-judgemental services has also been highlighted in research from the UK (Warren et al., 2016). Hence, pharmacy staff may benefit from training to ensure a non-judgemental approach towards their patients.

Patient-centred care (PCC) has emerged as a primary approach to health care (Jo Delaney, 2018). As part of this, the importance of respecting patients' choices and decisions is increasingly recognised (Jo Delaney, 2018). Involving patients in decisions can increase patients' trust and confidence in healthcare professionals (Croker et al., 2013).

Role-play training, which simulate situations in the pharmacy, can increase confidence when counselling patients and decrease the perception of the difficulty of completing tasks (Corelli et al., 2005; James et al., 2001; Rao, 2011). It should therefore be used in training. This was suggested by pharmacy staff interviewed as part of this PhD project.

The recommendations relating to pharmacy staff-users interaction are provided in Table 28.

TABLE 28 RECOMMENDATION(S) RELATING TO PHARMACY STAFF-USER INTERACTION

Addressee of Recommendation(s)	Recommendation(s) relating to pharmacy staff-user interaction
Practice	• Pharmacies and commissioners should ensure pharmacy staff receives training including role-playing to increase staff confidence and a patient-centred approach (respectfulness of choice; non-judgemental attitude) • Pharmacies should record both sex and gender to capture transgender people in the data
Research	• Research should explore consultation experiences on the same service from different providers on large and diverse samples

10.3.4. Privacy of pharmacy users' personal information

Both the systematic review and the interview study identified that pharmacy users were uncomfortable or reluctant to share their personal information. According to the interview study, some pharmacy users were more likely to provide their personal information if the pharmacist assured them of the confidentiality of the service. However, for some users having to provide personal information was a barrier to access. Interview participants had mixed views on whether data should be shared with other health providers such as sexual health clinics. Some felt it would be beneficial as users would not have to provide information that they had shared previously at another sexual health providers.

There is little information available on pharmacy users' experiences of being asked for personal information as part of a consultation in the pharmacy. However, one study from 2003 also showed that pharmacy users were reluctant to share their data (Seston et al., 2003). With regards to the discussion on information sharing with other health providers, a study from New Zealand explored patients' attitude towards information sharing. It showed that patients' wanted to be involved in the discussion around sharing their information (Hunter et al., 2014).

The study also found that sharing patient information may create barriers to the attendance of SRHS (Hunter et al., 2014). A study from the UK showed, that 68% of sexual health clinic users found it important that sexual health clinic records were kept separate from GP and hospital records (Warren et al., 2016). This would suggest that sharing pharmacy users' data widely is not acceptable to the general public. Future research should further explore the views of the public and of healthcare professionals regarding the risks and benefits of sharing personal information.

Staff interviewed suggested that if pharmacy users could enter their details outside the consultation, e.g. via an app, this may make them more comfortable as they did not have to give their information out loud or face-to-face. Whether this would indeed help pharmacy users overcome their reluctance to provide data should be further explored.

Recommendations relating to privacy of pharmacy users' personal information is provided in Table 29.

TABLE 29 RECOMMENDATION(S) RELATING TO PRIVACY OF PHARMACY USERS' PERSONAL INFORMATION

Addressee of Recommendation(s)	Recommendation(s) relating to privacy of pharmacy users' personal information
Research	• Future research should explore the public's and health professionals' attitudes towards sharing data between healthcare providers or sexual health providers • Research should explore pharmacy users' perceptions about being asked for personal information when attending a pharmacy for SRHS

10.3.5. Consultation outcomes of pharmacy-based chlamydia treatment and condoms

The retrospective study found that most people attending for chlamydia treatment were provided with the antibiotic doxycycline rather than azithromycin. The retrospective study also showed that the majority of people attending for condoms were not provided with condom instructions.

In contrast to the findings of this thesis, an earlier study on pharmacy-based delivery of chlamydia treatment, which was conducted in England and Wales between 2006 and 2008 found that the large majority of people (93.2%) were provided with azithromycin instead of doxycycline (C. Anderson & Thornley, 2011). The recommendation for first line treatment for chlamydia infections changed from azithromycin to doxycycline between 2010 and 2015; this possibly explains the difference in proportion of supply of doxycycline and azithromycin (Lanjouw et al., 2010; Nwokolo et al., 2016).

Condom failure is a common problem (D. Greene et al., 2006; Shawe et al., 2001; Thompson et al., 1993) and condom instructions might positively contribute to safer sex.

However, a recent study from the US showed that discussing the usage of condoms made men feel embarrassed and emasculated since they felt it was expected that they knew how to use them (Wilson, 2018); this may have caused users not to ask for or accept condom instructions in the

pharmacy. Pharmacy staff should record whether they asked pharmacy users for condom instructions and whether pharmacy users accepted or declined them.

Table 30 provides an overview of recommendations relating to the consultation outcomes of pharmacy-based chlamydia treatment and condoms.

TABLE 30 RECOMMENDATION(S) RELATING TO THE CONSULTATION OUTCOMES OF PHARMACY-BASED CHLAMYDIA TREATMENT AND CONDOMS

Addressee of Recommendation(s)	Recommendation(s) relating to the consultation outcomes of pharmacy-based chlamydia treatment and condoms
Practice	• Pharmacies should record whether they asked pharmacy users if they wanted condom instructions and whether pharmacy users accepted or declined to receive them

10.4. Implementing SRHS into pharmacies

10.4.1. Pharmacy-based STI testing

Both the systematic review and the interview study identified issues with pharmacy-based STI testing. According to the systematic review, pharmacy users found it inconvenient that they had to return their samples to designated pathology laboratories, had to wait for the test results and had to call the hospital during working hours to receive the STI test results. While pharmacy users interviewed as part of the PhD project also had to post the sample to a designated laboratory and to wait for the test results, they did not have to call for the test results. Instead, *Umbrella*'s pharmacy users are sent a text message via phone once the test result has been confirmed. Pharmacy users interviewed did not complain about this process, indicating that texting the test results is more acceptable. One of the studies included in the systematic review, showed that users of pharmacy-based HIV testing were comfortable with pharmacy staff conducting a finger prick test and that the pharmacist was able to obtain the blood sample on the first attempt.

The blood sample which is part of *Umbrella's* STI self-sampling kits does not only test for HIV but also for syphilis. However, to test for syphilis, larger volumes of blood are required. Participants of the interview study who had obtained *Umbrella*'s self-sampling kit at the pharmacy expressed that they had difficulties with conducting the blood drawing. Users were required to take a lancet to draw blood into a tube. Some users therefore did not complete and return the test kit.

Further, one dyslexic pharmacy user complained that the instructions for the STI self-sampling kits were difficult to follow. Pharmacy staff were aware that pharmacy users had difficulties with the blood test for STI self-sampling kits and suggested that they could assist with the blood testing. This idea was supported by pharmacy users. The retrospective study found that STI self-sampling kits accounted for about 10% of all service requests.

Given that STI self-sampling kits were in contrast to other *Umbrella* services (e.g. chlamydia treatment, oral contraception, contraceptive injection) available in all *Umbrella* pharmacies ('Tier 1' and 'Tier 2' pharmacies), the uptake was relatively low. It also needs to be considered that those

women in need for emergency contraception are potentially at risk of contracting an STI due to unprotected sexual intercourse and should therefore ideally be offered an STI self-sampling kit. Given that 30464 women were provided emergency contraception in *Umbrella* pharmacies between August 2015 and August 2018 but only 5830 STI self-sampling kits dispensed, there appears to be a missed opportunity for STI testing. It is possible that women presenting for emergency contraception were not offered or declined STI self-sampling kits. To make sure those who were at risk of contracting an STI are tested, it should be recorded whether women were offered a STI self-sampling kit and, where relevant, why they declined.

Difficulties with drawing blood samples were also found to be an issue in another study on STI self-sampling kits (L. J. Brown et al., 2018). However, a Dutch study in which dried spot testing was used, reported that service users felt that the STI testing was easy to conduct (van Loo et al., 2017). Further, in a study from the US, an oral test (OraQuick©) with comparable accuracy to provider-assisted testing in clinical setting was used to test for HIV and the large majority of users found it easy to conduct it (John et al., 2019). The large majority of participants in this study were able to correctly self-test the STI results in the correct time window (John et al., 2019). Hence, other ways of self-sampling or self-testing such as the dried spot test or an oral test may be more feasible to conduct for users and sexual health providers could consider using these rather than samples where blood needs to be drawn into tubes. Low uptake and return rates of STI self-sampling kits due to problems with or fear of the blood test are not cost-effective and inefficient in addressing STI rates.

Further, another study in which pharmacist assisted with a dry blood spot syphilis screening in the pharmacy was found to be acceptable to pharmacy users (Buchanan et al., 2016). Pharmacist-assisted STI testing was also supported by staff and users interviewed for this thesis. However, pharmacist-assisted screening requires commitment and training for the pharmacist and also potentially puts the pharmacist at risk as they have to handle blood from pharmacy users who may carry a blood-borne infection (H. Wood & Gudka, 2018). Hence, while a pharmacist assisted STI testing scheme may be accepted by staff and users, staff safety must be considered. Evidence on pharmacist assisted STI testing is still limited and more evidence is needed. Further, how labelling and instructions for STI self-sampling kits could be improved, particularly for dyslexic people should be explored. Recommendation(s) relating to pharmacy-based STI testing are provided in Table 31.

TABLE 31 RECOMMENDATION(S) TO PHARMACY-BASED STI TESTING

Addressee of Recommendation(s)	Recommendation(s) relating to pharmacy-based STI testing
Practice	• Sexual health providers should consider replacing collecting the blood sample test using a lancet by a more acceptable method (e.g. oral testing, dry blood spot testing) or consider introducing pharmacist assistance with the testing (with appropriate additional training)
Research	• More research on pharmacist assisted STI testing is needed to explore how to make STI self-sampling kits more acceptable and easier to use -including for people with a disability and other disadvantaged groups

10.4.2. Pharmacist-assisted contraceptive injection

Only one study included in the systematic review and one pharmacy user interviewed gave insight into the experience of pharmacy-assisted contraceptive injection. While the pharmacy user interviewed had a positive experience and remarked that the injection was painless and quick, mixed experiences were reported from the study included in the systematic review. The contraceptive injection was also found to be the least requested of all SRHS offered by *Umbrella* offers.

Evidence on pharmacist-assisted contraceptive injection is scarce. In line with findings from this current thesis, mixed experiences were also reported in this study and the authors concluded that pharmacies' service quality needed to be improved and training for pharmacy staff be expanded (Gonsalves et al., 2019).

A recent study from the UK showed that only 33% (66/191) of those women who were not currently using the contraceptive injection would consider getting the contraceptive injection from a pharmacy (Rebecca Heller & Cameron, 2016). Hence, a lack of interest may explain the low uptake of pharmacy-based contraceptive injection. However, it also possible that the uptake was relatively low because women were not aware that the service was available.

More research on access to pharmacist-assisted contraceptive injection is needed. Different aspects such as experience, awareness, satisfaction and uptake should be explored. The recommendation relating to pharmacist-assisted contraceptive injection is provided in Table 32.

TABLE 32 RECOMMENDATION(S) RELATING TO PHARMACIST-ASSISTED CONTRACEPTIVE INJECTION

Addressee of Recommendation(s)	Recommendation(s) relating to pharmacist-assisted contraceptive injection
Research	• More research on the provision of pharmacist-assisted and self-administered contraceptive injection from pharmacies should be performed (e.g. experiences, awareness, satisfaction, uptake)

10.4.3. Awareness of pharmacy-based SRHS

According to both staff and users, people were not aware of the full range of SRHS, the eligibility criteria for the services (e.g. age and gender), and the availability of services in terms of which pharmacies offered the services. Further, the interview study found that one pharmacy user was charged for the *Umbrella* service by a pharmacy healthcare assistant who wrongly believed that *Umbrella*'s SRHS were only free for a certain age group. The retrospective study showed that emergency contraception, condoms and STI self-sampling kits were the most requested services.

In line with the findings from the PhD project, several studies have shown that there is a lack of awareness for the range of extended pharmacy services (Cooper & Tsoneva, 2017; Ali M.K. Hindi et al., 2018; Maclure et al., 2018; Ramsbottom et al., 2016; R. M. Rodgers et al., 2016). While out of scope of this PhD, it is possible that awareness for services is linked to people's socioeconomic status. Health literacy, defined as person's ability to access health information(Sørensen et al., 2012), has been found to be lower in people from lower educational levels in a recent review (Stormacq et al., 2019).

A study from the US showed that there was a significant positive correlation between awareness and the utilisation of pharmacy services (Dooda et al., 2017). Hence, increasing awareness may lead to an increase in uptake of SRHS. The retrospective study has shown that emergency contraception, condoms and STI self-sampling kits have been the most requested services over the past three years. Possibly, this was because these three services have been available from the pharmacy without prescription for a longer time, whereas prescription-free oral contraception, contraceptive injection and chlamydia treatment are novel services, which are not available in all areas in England. However, it is also possible that those women presenting for emergency contraception were additionally provided with condoms (to prevent STIs and pregnancy in the future) and STI self-sampling kits (to test for STIs after unprotected sexual intercourse). More data on the uptake of pharmacy-based SRHS is needed to provide context to these findings.

Participants in the interview study suggested increasing awareness through more advertising. In Uganda, researchers are exploring whether mobile phone applications may increase awareness and the uptake of sexual and reproductive health services using a randomised controlled trial (Nuwamanya et al., 2018). However, the results have not been published yet. A recent study has shown that advertising campaigns can increase the uptake of STI testing amongst males in a university setting (E. A. Anderson et al., 2016). However, more research on this is needed. Exploring the relationship between awareness and uptake and how these relate to user characteristics (e.g. age, ethnicity, socioeconomic status) would also contribute to understanding whether the delivery of services is likely to be cost-effective.

Further, studies comparing awareness and uptake of SRHS by health providers such as pharmacies, General Practices and Sexual Health or Family Planning Clinic are needed to better

understand pharmacies' contribution to an integrated system of healthcare delivery at a local, regional or national level.

Pharmacy users complained that it was difficult to find out where and which types of services could be accessed. Pharmacies should ensure that their online information is clear and up to date.

Further, the case where a pharmacy user interviewed was wrongly charged for a service highlights the importance of staff training. It is recommended that pharmacies train all pharmacy staff, including pharmacy healthcare assistants, on the services that the pharmacy provides in order to prevent misinformation being passed on to pharmacy users. Currently, *Umbrella's* training is only compulsory for pharmacists.

An overview of the recommendations relating to awareness of pharmacy-based SRHS are provided in Table 33.

TABLE 33 AWARENESS OF PHARMACY-BASED SRHS

Addressee of Recommendation(s)	Recommendation(s) relating to awareness of pharmacy-based SRHS
Practice	• Pharmacies should include compulsory training for pharmacy healthcare assistants • Pharmacies should ensure their online information on available services is clear and up to date
Research	• Future research should explore the association between awareness, advertising and uptake of services in pharmacies and other service providers (e.g. General Practices, Clinics) and how these relate to characteristics of the user (e.g. ethnicity, age, socioeconomic status)

10.4.4. Clinical support for pharmacies

According to the interview study, pharmacy staff sometimes experienced difficulties in getting through to the clinical advice line, which was set up to support *Umbrella* pharmacists in clinical decision making. Further, pharmacists complained that there were insufficient clinical appointments for women presenting for the copper coil available. The retrospective study showed that less than one percent of women presenting for emergency contraception were provided with a copper coil appointment or referral.

While it can be perceived positively that pharmacies were provided with a clinical advice line, health providers should ensure that pharmacies are provided with sufficient support. Health providers could for example sent out feedback forms to pharmacies to evaluate their satisfaction with the clinical advice line.

Pharmacists in the interview study complained about a lack of clinical appointments for the copper coil for women presenting for emergency contraception.

Possibly, lack of appointments was the reason why the number of copper coil appointments identified through the retrospective study was low. Lack of availability of IUD appointments due to

few appointments with a trained provider has also been shown to be a barrier to its use in a study from the US where mystery callers contacted primary care, family planning and Ob/Gyn clinics to get an appointment (Schubert et al., 2016). However, it is also possible that women were reluctant to accept the copper IUD. Previous research showed that the interest of emergency contraception users in the copper coil is low (Turok et al., 2011) and that women have concerns about the long-acting nature and safety of intrauterine contraception (S. Walker et al., 2016). Further, it may also be that women were not offered the copper coil by pharmacy staff.

Research should explore how many women are offered and accept or decline the copper coil IUD, and the reasons for their decision. Further, the number of those who agreed to get a copper coil IUD and subsequently get an appointment should be measured. This will help to assess whether clinical appointments are indeed a barrier to access. For this research to be conducted, pharmacies have to ensure that the relevant data is recorded.

The list of recommendations is provided in Table 34.

TABLE 34 RECOMMENDATION(S) RELATING TO THE COLLECTION AND USE OF PERSONAL INFORMATION

Addressee of Recommendation(s)	Recommendation(s) relating to collection and use of personal information
Practice	• Health providers should evaluate how many women attending for emergency contraception are offered the copper coil IUD, and how many accept
Research	• Future research should explore the reasons why women attending for emergency contraception accept or decline the copper coil as IUD and the effectiveness of pathways to insert an IUD

10.5. Impact of delivering SRHS on pharmacy staff

10.5.1. Pharmacy staff workload

Both the systematic review and the interview study showed that the delivery of SRHS added workload and was sometimes stressful for pharmacy staff. The collection of data relating to the consultation was the most commonly named factor contributing to the increased workload. Both the systematic review and the interview study suggested that collecting data electronically (rather than on paper forms) would contribute to greater time efficiency. Further, creating an opportunity for pharmacy users to pre-register themselves for the service was identified to have potential to shorten and use the consultation time more effectively. The key factor associated with the perception of workload was the level of staffing. Pharmacy staff working in pharmacies where several pharmacists and pharmacy healthcare assistants were employed experienced a lower workload compared to those working in pharmacies where only a single pharmacist and less pharmacy healthcare assistants were employed. Pharmacy staff in the interview study described that they sometimes had to multitask.

For example, some pharmacists described that they were labelling medications at the same time as delivering the consultation on SRHS due to time pressure. There were mixed views on whether workload could be allocated to pharmacy healthcare assistants to take pressure from pharmacists, who were more affected by the added workload than pharmacy healthcare assistants.

Several studies found that the workload for pharmacy staff has increased over time (W. Gidman, 2011; W. K. Gidman et al., 2007). Concerns about workload and time constrains have also been identified in several studies on pharmacy staff attitude towards the implementation of extended services (Family et al., 2014; W. Gidman, 2011; Hilverding & Mager, 2017). Further, research from England has shown that satisfaction levels with workload were low (Morrissey, 2017). In line with findings from this thesis, completing administrative work has also been identified to be a contributor to added workload in a previous study (Pumtong et al., 2008).

Insufficient staffing levels causing pharmacy staff to feel under pressure to deliver services quickly has also been reported in another study on pharmacy services (Barnes et al., 2018). Further, a previous study has shown that pharmacy staff were concerned that having to multitask would increase the risk of errors (Family et al., 2014; W. Gidman, 2011).

A study from England found that delegating tasks to support staff could indeed improve the management of workload (V. M. Lea et al., 2016). However, it also reported that some pharmacists were reluctant to delegate work (V. M. Lea et al., 2016). More research should explore pharmacists' and pharmacy healthcare assistants' attitudes towards shifting sexual and reproductive healthcare tasks to pharmacy healthcare assistants.

A recent study showed that pharmacists believed that mobile apps could hold a role in modern day pharmacy practice (Davies et al., 2014). However, the option to let pharmacy users pre-register themselves and provide relevant data (e.g. age, gender, ethnicity, information relevant to deliver service) has not yet been explored. However, using apps for this purpose could reduce the consultation time in pharmacies. Further, linking to topic of provision of pharmacy users' personal information (described in section 9.3.3) pre-registration may also make pharmacy users who are reluctant to provide personal information face-to-face more comfortable. Research should explore users' and staff attitudes towards options for pharmacy users to pre-register themselves.

Given that workload is evidently a concern for many pharmacy staff members, policymakers and health providers should not introduce new pharmacy services without exploring their feasibility in terms of workload in advance. Further, providing guidance on how many pharmacy staff members are necessary to run certain services should be considered. Finally, pharmacies should move towards the use of electronic records to increase work efficiency. Recommendations relating to pharmacy staff workload are provided in Table 35.

TABLE 35 RECOMMENDATIONS RELATING TO PHARMACY STAFF WORKLOAD

Addressee of Recommendation(s)	Recommendation(s) relating to pharmacy staff workload
Practice	• Commissioners could specify in their commissioning brief that electronic patient records are needed; equally, pharmacies should use electronic records; this should include pharmacy healthcare assistants being allowed to securely record data electronically
Policymakers	• Policymakers should test the feasibility of adding more pharmacy services in terms of workload; guidance on the number of staff members needed to deliver services are required
Research	• Future research should explore pharmacy users' and staff attitudes towards pre-registration for pharmacy services • The feasibility and acceptability of training pharmacy healthcare assistants to deliver more services should be further explored

10.5.2. Pharmacy staff motivation and recognition

Both the systematic review and the interview study showed that pharmacy staff were generally motivated to expand their role and deliver SRHS. Financial benefits (e.g. from an increase in footfall in the pharmacy and the remuneration for delivering *Umbrella's* services) were not mentioned by pharmacy staff members interviewed as motivating factor to deliver SRHS. In fact, according to the systematic review and interview study, some pharmacy staff felt they did not receive sufficient financial recognition for delivering services. However, pharmacy staff were not directly asked in the interviews whether financial benefits from *Umbrella's* services motivated them to deliver the SRHS as this question would have been leading.

Motivation has been found to be an important consideration when planning to deliver new services (S. Michie et al., 2011). When staff are motivated they are more likely to deliver new services (T. Greenhalgh et al., 2016). Equally, evidence on extended pharmacy services other than SRHS show that the delivery of new services can increase staff motivation and satisfaction (L. Hattingh et al., 2020; Luetsch, 2017; Thomson et al., 2019). However, in line with findings from this thesis, dissatisfaction with remuneration has previously been found to be a concern in previous research on extended services from England (Ali M.K. Hindi et al., 2019; Morrissey, 2017). Hence, lack of financial compensation is not unique to SRHS but for a range of extended pharmacy services. Policymakers and pharmacies should consider offering more attractive financial incentives in order to keep staff motivated and make them feel recognised. If financial payment is not feasible then other ways to show appreciation might be considered, for example providing staff feedback or award events may contribute to a feeling of recognition.

An overview of the recommendations relating to pharmacy staff motivation and recognition are presented in Table 36.

TABLE 36 RECOMMENDATION(S) RELATING TO PHARMACY STAFF MOTIVATION AND RECOGNITION

Addressee of Recommendation(s)	Recommendation(s) relating to pharmacy staff motivation and recognition
Practice	Pharmacies should consider offering more attractive financial compensation or other incentives for delivering extended services to their staff
Policymakers	Policymakers should consider whether to regulate how pharmacy staff should be incentivised for going beyond their traditional role

10.5.3. Uptake of pharmacy-based SRHS by age

The retrospective study showed that those between 16 and 24 accounted for more than 50% of SRHS requests.

Young people are particularly vulnerable to poor sexual health outcomes (Gonsalves & Hindin, 2017; Slater & Robinson, 2014). This was also shown in a study from the Netherlands where the positivity rate for chlamydia was higher in the 15-24 age group compared to the overall average (14% versus 5%) (van Bergen et al., 2004).

The finding from the retrospective study suggests that pharmacies are reaching young people who are at high need for SRHS. When comparing the findings from the retrospective study to a recent study from Birmingham (Banerjee et al., 2018), a higher proportion of young people between 16 and 24 were accessing the pharmacy rather than sexual health clinics for STI screening (62.9% versus 50%). This suggests, that pharmacy-based STI testing is more acceptable to this demographic than clinic-based testing. Future research should explore how young people decide where to access SRHS. Further, more data on the uptake of pharmacy-based SRHS in terms of users' characteristics is needed to provide context to our findings. Recommendations relating to the uptake of pharmacy-based SRHS are presented in Table 37.

TABLE 37 RECOMMENDATION(S) RELATING TO THE UPTAKE OF PHARMACY-BASED SRHS BY AGE

Addressee of Recommendation(s)	Recommendation(s) relating to the uptake of pharmacy-based SRHS by age
Research	• Research should explore what factors affect how young people decide where to access SRHS • The use of pharmacy-based SRHS according to users' demographic and behavioural data should be analysed further

10.5.4. Uptake of pharmacy-based SRSH by ethnicity

According to the retrospective study, White/White British individuals were the largest group who accessed pharmacy services (43.3%), followed by Asian/Asian British (23.1%), Black/Black British (15.1%), mixed (6.4%) and other ethnic groups (2.0%).

When comparing the findings to the latest census data from Birmingham, ethnic groups were represented approximately proportionally to their prevalence (Birmingham City Council, 2011) – White/White British (census 57.9% cf. study population 43.4%), Asian/Asian British (census 23.7% cf. study population 23.1%), Black/Black British (census 7.2% cf. study population 15.1%), Mixed/Mixed British (census 4.4% cf. study population 2.0%) and other ethnic groups (census 6.7% cf. study population 5.8%). Black/Black British appeared to be over-represented in comparison to the local population, suggesting that pharmacies may reach those associated with potentially poor sexual health outcomes (Fenton, 2001). However, in comparison to 2018 sexual health clinic data from Birmingham (Umbrella, 2018), people from Black/Black British or other ethnic groups appeared to be less likely to attend the pharmacy rather than the clinic for SRHS (clinic: 25% cf. pharmacy: 15.1%). In contrast, Asian/Asian British people appeared to be more likely (clinic: 18% cf. pharmacy: 23.1%) and White/White people as likely to attend the pharmacy (clinic: 43% cf. pharmacy: 43.4%) for SRHS. This suggests that ethnic minorities prefer different healthcare settings for SRHS. However, due to limitations of the dataset, available data identified only the number of service requests rather than the number of individual patients. Hence, this finding has to be treated with caution. Exploring differences in SRHS attendance of different settings by ethnicity and reasons for preferences should be further explored in the future.

Health providers should collect data in a way that allows analysis of service requests on an individual level to better understand whether the uptake of services is representative of the population in Birmingham. This would help to identify people who are not currently reached by pharmacy-based SRHS.

TABLE 38 RECOMMENDATION(S) RELATING TO THE UPTAKE OF PHARMACY-BASED SRHS BY ETHNICITY

Addressee of Recommendation(s)	Recommendation(s) relating to uptake of pharmacy-based SRHS by ethnicity
Practice	• Pharmacies should collect demographic and behavioural data at the level of the individual to better understand whether the service is reaching higher risk groups

10.5.5. Uptake of pharmacy-based SRHS by the day of the week

The retrospective study showed that the uptake of services was the highest overall on Mondays and the lowest on Sundays. Attendance patterns by the day of the week varied by gender. Emergency contraception, condoms and STI self-sampling kits were most commonly requested by women on Mondays. Men were most likely to obtain condoms from pharmacies on Fridays.

In line with this, previous studies on emergency contraception also found that the uptake of emergency contraception was highest on Monday (Killick & Irving, 2004; Mantzourani et al., 2019). This suggests that sexual activity is more likely to occur on the weekend. This could also explain why males are most likely to attend for condoms on Fridays. This assumption is supported by a study from Singapore which found that sexual activity occurs more frequently on the weekend (Tan, 2020). However, more research exploring when sexual activity is most likely to occur is needed as this could inform health providers in preparing their stock and in deciding when to have a pharmacist trained in the provision of emergency contraception available.

Policymakers have increasingly tried to deliver integrated sexual health services, where several sexual health and contraceptive needs can be addressed at one site visit (PHE & DH, 2018). It was found that emergency contraception, STI self-sampling kits and condoms were most frequently requested on Mondays. It is likely that those women attending on Mondays were additionally provided with STI self-sampling kits (as they had been at risk of contracting an STI through unprotected sexual intercourse) and condoms (to prevent unwanted pregnancy and STI contraction in the future). This would suggest that principles of integrated sexual and reproductive health services in the pharmacy are working. However, as no dates of attendance were available, it was not possible to analyse whether women were indeed provided with all three services in one day (rather than in three different visits). For future research, it would be important that the date of attendance (day/month/year) is included so that research can explore whether the integrated sexual and reproductive health service delivery, where several sexual and reproductive health needs are addressed in one visit, is indeed working. Data on the date of service request within the PhD quantitative analysis was not provided due to concerns about pharmacy users' anonymity. Having access to the date of attendance would also have allowed for the analysis of service uptake over time. It was also not possible to analyse service uptake at an individual level because pharmacy users obtained a new identification number whenever they entered a different pharmacy. Health providers should try to create a system where uptake of services can be tracked. This would help analyse what proportion of different types of pharmacy users (e.g. in terms of demographics) were provided with further services.

In line with previous research on emergency contraception (Killick & Irving, 2004; Mantzourani et al., 2019), the retrospective study showed that service requests for emergency contraception were lowest on Sundays. This could be explained by less demand on Sunday but also by less uptake due to barriers to access. According to current data provided by *Umbrella*, the majority of *Umbrella*'s pharmacies are closed on Sunday (76.7%, 122/159), suggesting that limited Sunday access was the main reason for low uptake. However, historic data is not available on the opening times of *Umbrella* pharmacies. Hence, it could be that opening times varied in the past. Health providers should ideally keep track of opening times of pharmacies and availability of trained staff. Demand, service uptake and opening times should be further explored in future research to understand whether Sunday access is a barrier to pharmacy-based SRHS.

An overview of the recommendations relating to the uptake of pharmacy-based SRSH by the day of the week are provided in Table 39.

TABLE 39 RECOMMENDATION(S) RELATING TO UPTAKE OF SERVICES BY THE DAY OF THE WEEK

Addressee of Recommendation(s)	Recommendation(s) relating to uptake of services by the day of the week
Practice	• Health providers and pharmacies should record pharmacy opening times
Research	• Future research should explore when sexual activity is most likely to occur as this can inform sexual healthcare provision • Demand and service provision for time sensitive services such as emergency contraception should be further explored

10.6. Overview of Recommendations

In section 10.2 to 10.5, recommendations were developed along the discussion of the integrated findings. In this section, the recommendations are briefly summarised according to the addressee (practice, policymakers or future researchers).

10.6.1. Recommendations for practice

Many of the recommendations for practice were for pharmacies to extend or improve the way that pharmacy staff are trained on the SRHS in order to increase the service quality (e.g. adding more roleplaying to training to make staff more confident, training on the discreet delivery of services). Recommendations relating to training have the potential to improve service quality for pharmacy users (e.g. by making training on SRHS compulsory for pharmacy healthcare assistants; by monitoring/ audit whether training for pharmacy staff is effective). Relating to pharmacy users' experience, further recommendations to make services more user-friendly (e.g. by changing way that STI blood samples are collected; making information on whether and when male/female staff and trained are available in the pharmacy) or keep them user friendly (e.g. keeping walk-in services and long opening times). Other recommendations aimed to improve pharmacy staff satisfaction (e.g. providing pharmacy staff with incentives or remuneration for service delivery). Further, recommendations for pharmacies were made to meet NHS guidelines (e.g. ensuring sure that the consultation room is soundproof). By increasing service quality and making services more user- and staff-friendly, it is likely that pharmacy users' and staff experiences of the service will increase.

Other recommendations for practice aimed to facilitate research on pharmacies (e.g. collecting data on both sex and gender of pharmacy users'; collecting data on whether condom instructions/copper coil appointment where provided; collect data in a way that allows to analyse data on individual level). By facilitating research, more evidence understanding how pharmacies contribute to the delivery of SRHS and other services can be conducted, which again can help to optimise services. An overview of all recommendations for practice is provided in Table 40.

TABLE 40 RECOMMENDATIONS FOR PRACTICE

Recommendations for Practice	
Recommendation	**Theme**
• Pharmacies should continue to offer walk-in consultations and long opening hours as convenience is perceived as a key strength of pharmacies	Recommendation(s) relating to convenience of pharmacy-based SRHS
• Pharmacies should ensure that their consultation rooms meet the privacy requirements by NHS England, e.g. in terms of being soundproof • More effective training for pharmacy staff on the importance of the discreet delivery of services is needed; • Monitoring of adherence to guidelines and training relating to privacy is needed	Recommendation(s) relating to need for physical privacy in the pharmacy
• Pharmacies should ensure that there are trained staff available at all times or ensure that there is information available for pharmacy users to check when trained staff are available • Pharmacies should have referral plan in place to ensure that pharmacy users can be directed to another health provider if no pharmacy staff are available	Recommendation(s) relating to the need for trained pharmacy staff
• Pharmacies should try to improve privacy as this may increase the uptake of males • Health providers should use multilevel interventions to increase the uptake of males	Recommendation(s) relating to the uptake of pharmacy-based SRHS by males
• Pharmacies should consider providing access to translation services/ translated material for services	Recommendation(s) relating to language and communication barriers between pharmacy staff and users
• Pharmacies should ask users whether they want to talk to a male or female pharmacist and could consider letting pharmacy healthcare assistants chaperone consultations if preferred by the pharmacy user; Pharmacies should also make information available online on whether and when female/male pharmacists are available	Recommendation(s) relating to preferences regarding the sex of pharmacy staff
• Pharmacies and commissioners should ensure pharmacy staff receives training including role-playing to increase staff confidence and a patient-centred approach (respectfulness of choice; non-judgemental attitude) • Pharmacies should record both sex and gender to capture transgender people in the data	Recommendation(s) relating to pharmacy staff-user interaction
• Pharmacies should record whether they asked pharmacy users if they wanted condom instructions and whether pharmacy users accepted or declined to receive them	Recommendation(s) relating to the consultation outcomes of pharmacy-based chlamydia treatment and condoms
• Sexual health providers should consider replacing collecting the blood sample test using a lancet by a more acceptable method (e.g. oral testing, dry blood spot testing) or consider introducing pharmacist assistance with the testing (with appropriate additional training)	Recommendation(s) relating to pharmacy-based STI testing
• Pharmacies should include compulsory training for pharmacy healthcare assistants • Pharmacies should ensure their online information on available services is clear and up to date	Recommendation(s) relating to awareness of pharmacy-based SRHS
• Health providers should evaluate how many women attending for emergency contraception are offered the copper coil IUD, and how many accept	Recommendation(s) relating to collection and use of personal information

• Pharmacies should digitalise the collection of data; this should include pharmacy healthcare assistants being allowed to securely record data electronically	Recommendation(s) relating to pharmacy staff workload
• Pharmacies should consider offering more attractive financial compensation or other incentives for delivering extended services to their staff	Recommendation(s) relating to pharmacy staff motivation and recognition
• Pharmacies should collect demographic and behavioural data at the level of the individual to better understand whether the service is reaching higher risk groups	Recommendation(s) relating to uptake of pharmacy-based SRHS by ethnicity
• Health providers and pharmacies should record pharmacy opening times	Recommendation(s) relating to uptake of services by the day of the week

10.6.2. Recommendations for policymakers

A few recommendations for policymakers were made. Some aimed to improve pharmacy staff experience (e.g. by considering testing that workload for extended pharmacy services is feasible for staff before implementation; by considering whether to provide staff with a financial incentive to deliver services). One recommendation aimed to improve communication between staff and users (e.g. by considering whether to offer pharmacies the possibility to get access to translating services). One recommendation is considering the current COVID-19 pandemic and therefore be considered to more urgent to address than others. An overview of all recommendations for policymakers can be found in Table 41.

TABLE 41 RECOMMENDATIONS FOR POLICYMAKERS

Recommendations for Policymakers	
Recommendation	**Theme**
• NHS England should provide guidelines on how to deliver pharmacy-based SRHS while ensuring privacy, including during pandemics such as COVID-19	Recommendation(s) relating to need for physical privacy in the pharmacy
• Policymakers in England should consider of establishing a translating services following the Australian Translating and Interpreting services	Recommendation(s) relating to language and communication barriers between pharmacy staff and users
• Policymakers should test the feasibility of adding more pharmacy services in terms of workload; guidance on the number of staff members needed to deliver services are required	Recommendation(s) relating to pharmacy staff workload
• Policymakers should consider whether to regulate how pharmacy staff should be incentivised for going beyond their traditional role	Recommendation(s) relating to pharmacy staff motivation and recognition

10.6.3. Recommendations for future research

In this section, recommendations for future research which were identified through the integration of findings are summarised. Additionally, further considerations for future research are highlighted.

Recommendations for future research based on the integrated findings

The findings from the systematic review and interview study showed that privacy is a concern for pharmacy users. However, little research address privacy in the pharmacy. Possibly, a workshops or Ideas Café with pharmacy staff, designers, and members from the public could be used to explore solutions (Ulahannan et al., 2018). Many recommendations were made, which could be explored through pharmacy staff (e.g. barriers to SRHS training; attitude towards letting pharmacy users pre-register themselves before the consultation) and pharmacy users (e.g. pharmacy users attitude towards data sharing, attitude towards having opportunity to pre-register themselves, preferences regarding sex of pharmacy staff, attitudes towards being chaperoned in the pharmacy). Surveys could also be used to compare people's experience with different types of STI self-sampling kits. In order to explore how best to address language barriers, different interventions could be trialled in different pharmacies (e.g. translating services versus translated material versus both translating services and translated material) to explore how best to overcome language barriers in areas with high proportions how cannot speak English (well). In order to explore the impact of not having trained staff available mystery shoppers could be used to test the availability of staff at different times of the day and the week. (Secondary) analysis of data would be appropriate to address other research questions (e.g. uptake of contraceptive injection and the copper coil; uptake of SRHS between different providers). The list of recommendations for future research is provided in Table 42.

TABLE 42 RECOMMENDATIONS FOR FUTURE RESEARCH (BASED ON THE INTEGRATED FINDINGS)

Recommendations for future research	
Recommendation	**Theme**
• Future research should explore innovative and cost-effective solutions to provide privacy to pharmacy clients	Recommendation(s) relating to need for physical privacy in the pharmacy
• Future research should explore the impact of not having trained staff available and reasons for staff not to obtain training • Future research should explore how to overcome barriers to training	Recommendation(s) relating to the need for trained pharmacy staff
• Research should explore barriers to pharmacy-based SRHS for males • Research should compare the uptake of services by different sexual and reproductive health providers (e.g. pharmacies, clinics and General Practices) and by gender	Recommendation(s) relating to the uptake of pharmacy-based SRHS by males
• Future research should explore solutions to address language barriers (e.g.	Recommendation(s) relating to language and communication barriers between pharmacy staff and users

translating services, resources translated in several languages)	
• Future research should explore pharmacy users' and pharmacy staff attitudes towards introducing chaperoning for the delivery of sexual and reproductive health services • Future research should also explore pharmacy users' preferences with regards to the sex of pharmacy staff delivering SRHS	Recommendation(s) relating to preferences regarding the sex of pharmacy staff
• Research should explore consultation experiences on the same service from different providers on large and diverse samples	Recommendation(s) relating to pharmacy staff-user interaction
• Future research should explore the public's and health professionals' attitudes towards sharing data between healthcare providers or sexual health providers • Research should explore pharmacy users' perceptions about being asked for personal information when attending a pharmacy for SRHS	Recommendation(s) relating to privacy of pharmacy users' personal information
• More research on pharmacist assisted STI testing is needed to explore how to make STI self-sampling kits more acceptable and easier to use -including for people with a disability and other disadvantaged groups	Recommendation(s) relating to pharmacy-based STI testing
• More research on the provision of pharmacist-assisted and self-administered contraceptive injection from pharmacies should be performed (e.g. experiences, awareness, satisfaction, uptake)	Recommendation(s) relating to pharmacist-assisted contraceptive injection
• Future research should explore the association between awareness, advertising and uptake of services in pharmacies and other service providers (e.g. General Practices, Clinics) and how these relate to characteristics of the user (e.g. ethnicity, age, socioeconomic status)	Recommendation(s) relating to awareness of pharmacy-based SRHS
• Future research should explore the reasons why women attending for emergency contraception accept or decline the copper IUD, and the effectiveness of referral pathways to insert an IUD	Recommendation(s) relating to collection and use of personal information
• Future research should explore pharmacy users' and staff attitudes towards pre-registration for pharmacy services • The feasibility and acceptability of training pharmacy healthcare assistants to deliver more services should be further explored	Recommendation(s) relating to pharmacy staff workload

• Research should explore what factors affect how young people decide where to access SRHS • The use of pharmacy-based SRHS according to users' demographic and behavioural data should be analysed further	Recommendation(s) relating to the uptake of pharmacy-based SRHS by age
• Future research should explore when sexual activity is most likely to occur as this can inform sexual healthcare provision • Demand and service provision for time sensitive services such as emergency contraception should be further explored	Recommendation(s) relating to uptake of services by the day of the week

Further considerations for future research

The systematic review showed that evidence on pharmacy-based sexual and reproductive health services was limited to evaluation of pharmacy services which only provided one or two different sexual and reproductive health services. It also showed that studies on pharmacy-based sexual and reproductive health were often not of high-quality reporting. Only few studies allowed for a multi-perspective exploration of pharmacy-based sexual and reproductive health services, and particularly pharmacy healthcare assistants were rarely involved in research in this field although they are usually the first contact to pharmacy users. It was also found in the systematic review that there was a lack of research exploring users' and staff experiences of some services such as chlamydia treatment, partner notification, hepatitis B vaccine or testing for STIs such as syphilis and gonorrhoea. The novel methodological approach of this PhD, in combining qualitative and quantitative methods and the use of PIP, has highlighted the need for more high-quality research giving multi-perspective insight into staff and users' experiences of a variety of pharmacy-based sexual and reproductive health services.

A limitation of this project is that most data analysed was based only on one pharmacy service *(Umbrella)*. However, to allow for findings to be more transferrable, future research should consider the collection and analysis of data from several pharmacy services, e.g. through a survey. Another limitation was that non-service users' and non-service providers' views were not considered although this may have revealed further barriers to service access. Hence, future research should consider views of both non-service users and non-service providers to explore how uptake of sexual and reproductive health services could be increased.

10.7. Strengths and Limitations

The strengths and limitations of each of the three studies (systematic review, retrospective study, interview study) were outlined in the individual chapters. In this section, key strengths and limitations of the thesis as a whole are considered:

10.7.1. Key strengths of this PhD project

The PhD thesis had four clear objectives, and all of these were addressed by using different study designs. The combination of multiple methods to address the overall research questions can be perceived as a strength as it allowed for an in-depth exploration of different aspects (e.g. utilisation and experiences) of pharmacy-based sexual and reproductive health services.

Before this PhD project, no research had explored a pharmacy service delivering a large range of pharmacy-based sexual and reproductive health. The insights gained from the research has extended the existing knowledge on the experiences and the utilisation of a large range of pharmacy-based sexual and reproductive health services. The findings are likely to be interesting to those delivering and planning pharmacy-based sexual and reproductive health services.

Another strength of this thesis was that the experiences of pharmacists, pharmacy healthcare assistants and pharmacy users were explored. This allowed for an in-depth multi-perspective exploration of pharmacy-based sexual and reproductive health services. Pharmacy staff and pharmacy users' experiences are closely linked and therefore it was important to analyse data exploring how to improve both users' and staff experiences of service delivery.

Finally, the PhD project not only generated new knowledge on pharmacy-based sexual and reproductive health services but also on integration of data from mixed methods research. The method used to synthesise data in this thesis may be applied by other researchers wishing to integrate findings from different data sources.

10.7.2. Key limitations of this PhD project

One of the limitations of this research was that the data analysed and collected to explore pharmacy-based sexual and reproductive health services was limited to only one pharmacy service in Birmingham (*Umbrella*). While some findings may be transferrable to other settings in the UK and beyond, others may be unique to the pharmacy service evaluated or to the setting in Birmingham. However, the aim of this project was to explore a large range of pharmacy-based sexual and reproductive health services and this opportunity was unique to Birmingham where the pharmacy services *Umbrella* is delivering a large range of sexual and reproductive health services related to contraception and sexually transmitted infections.

A further limitation of this project was that only users and staff who had obtained or were delivering pharmacy-based sexual and reproductive health services were captured. Interviewing non-users and non-providers may have revealed further barriers to access and provide sexual and reproductive health services.

For this project it was considered that exploring experiences of those who had obtained or delivered SRHS from a pharmacy would generate more applicable findings for service improvement. However, the views of non-users and non-providers are important to be considered in future research in order to explore how the uptake of pharmacy-based sexual and reproductive health services by health providers and the public could be increased.

10.8. Dissemination of PhD Findings

To make an impact in the real world, it is important for the PhD findings and recommendations to be disseminated to different target audiences: academics, service users, the public, sexual health providers, commissioners and national policy makers. The PhD candidate has been awarded with a six months Early Career Fellowship at the University of Warwick, providing her with the time and resources to disseminate PhD findings in the future. This section describes what has been disseminated to date and is planned to be disseminated in the future.

10.8.1. Disseminating findings to Academic audiences

Research findings are commonly shared with academic audiences through journal papers and conference presentation/publications.

Dissemination to date

To date, both the systematic review and the retrospective study have been published in the high impact peer reviewed BMJ journal *Sexually Transmitted Infections* (Gauly et al., 2019, 2020). The systematic review has also been presented as a poster at the BASHH (British Association for Sexual Health and HIV) conference in Birmingham in 2018, the UK's leading professional organisation dealing with all aspects of sexual health care. In 2019, the retrospective study was presented in Shanghai at the conference of IUSTI (International Union against Sexually Transmitted Infections*),* the oldest international organisation in the field. The interview study has been written up for publication and is currently (as of September 2020) under review at the MDPI journal Pharmacy.

Dissemination plans for the future

The adapted version of the Pillar Integration Process will be written up for publication in the journal for mixed methods research to guide researchers wishing to integrate data from more than two data sources. Further, the integrated findings of the thesis will be shared in form of a presentation at a Warwick Medical School research seminar.

10.8.2. Disseminating findings to the public and study participants

Those who participated in a study deserve to be informed about the knowledge they have made possible. The interview study will therefore be written up as lay report and shared with those participants who expressed an interest in receiving the study report. However, it is also important to share the findings with the local community and the wider public.

Dissemination to date

In 2018, the PhD findings were shared with the public at the annual science festival 'Pint of Science' and 'Databeers', a summit open to everyone with an interest in data science in Coventry at Warwick University.

Dissemination plans for the future

The PhD candidate has established contacts with the Warwick Medical School media relations manager, Peter Thorley. Together with his help, she will write a press release to be published in a national or local newspaper. With the assistance of Warwick's Communications Team, findings will also be shared through social media, radio interviews and other channels to maximise the research impact.

10.8.3. Sexual health providers

Dissemination to date

The findings of the interview study were also presented at *Umbrella's* stakeholder event in September 2019. The stakeholder event was attended by 34 pharmacy team members and *Umbrella employees.*

Dissemination plans for the future

The PhD candidate will also present her findings and recommendations at an *Umbrella* webinar in October 2020. She will also develop a short report and infographic summarising all findings and recommendation relevant to pharmacies. This can be shared via *Umbrella* with all the community pharmacies that *Umbrella* is collaborating with. As part of the project, the PhD candidate has established contacts with large pharmacy chains in the UK. She will contact the pharmacy chains and offer to share her findings at the R&D departments.

10.8.4. Commissioners and national policy makers

Dissemination plans for the future

As part of the PhD project, the PhD candidate has attended several meetings of Birmingham's local pharmaceutical committee. The local pharmaceutical committee (LPC) is an independent and representative group of all community pharmacists and community pharmacy owners which work locally with NHS England Area Teams, Clinical Commissioning Groups, local authorities and other healthcare professionals to help plan healthcare services. The PhD candidate will seek an opportunity to present and discuss her findings at the local pharmaceutical committee. Possibly, Birmingham's LPC and Umbrella's business manager can assist the PhD candidate in sharing and discussing findings with Birmingham's City Council. Additional opportunities to present at regional and national meetings, such as the Royal Pharmaceutical Society English Pharmacy Board Meeting, a meeting to provide professional leadership, advocacy and support for pharmacy practice in England across all sectors, will be sought.

The PhD candidate has recently attended webinars from the All Party Parliamentary Group on Sexual and Reproductive Health in the UK (APPG SRH), a group of MPs and peers seeking to raise awareness in Parliament for sexual and reproductive health issues. The PhD candidate will contact the group and offer to share her findings in written form or in form of an oral presentation.

10.9. Conclusion

The current thesis provides a rigorous and innovative exploration of pharmacy-based sexual and reproductive health services (SRHS). A mixed methods approach was taken in order to develop recommendations for service optimisation.

The thesis made a number of unique contributions to the existing literature on pharmacy-based sexual and reproductive health services. Through a retrospective study of three-years of routinely collected data from a large sexual and reproductive health provider from Birmingham (England), the utilisation of pharmacy-based sexual and reproductive health services was explored. It was the first study of its kind. This research was also the first to compile a substantial body of literature using a systematic review to understand pharmacy staff and pharmacy users' experiences and attitudes when providing or being delivered with a large range of pharmacy-based SRHS. The review found that there was lack of high-quality qualitative evidence which assessed the views of pharmacists, pharmacy healthcare assistants and pharmacy users in England. This gap in knowledge was addressed by conducting semi-structured interviews with pharmacists, pharmacy healthcare assistants and pharmacy users in a service providing a wide range of SRHS via pharmacies in Birmingham (England). Findings from all three components of the thesis were synthesised using the Pillar Integration Process (PIP) which was further developed by the PhD candidate to allow the data integration of three datasets. The development of the Pillar Integration Process in this way will be applicable for future research and a further original contribution.

This thesis identified several barriers to the delivery of pharmacy-based SRHS, which should be addressed to further optimise its delivery. Considering these exceptional times as a result of the current COVID-19 pandemic, where General Practices and clinics have had to limit the provision of healthcare services, including sexual and reproductive health services; pharmacies have remained open and continued to deliver services. Therefore, pharmacies have evidently become an even more important point of access to healthcare than ever before.

Based on the results of this thesis, there is evidence to suggest that health care providers should recognise the potential of pharmacies to deliver SRHS and consider increasing service provision through pharmacies. When implementing sexual and reproductive health services in pharmacies, the recommendations outlined in this thesis should be considered.

Key recommendations from this thesis include exploring how to: adequately address physical privacy, overcome language and communication barriers (e.g. through the use of phone translation services) and reduce barriers to pharmacy-based STI testing (e.g. through pharmacy-assisted STI testing or alternative blood test methods).

Pharmacies and health providers should also assess the additional workload for pharmacists as a result of delivering SRHS and how this can be integrated with existing pharmacy work (e.g. by allocating work to other healthcare professionals and the use of electronic systems). Moreover, health providers should ensure that data is collected in a way that allows analysis of pharmacy-based SRHS at an individual level and over time. Work must also be done to raise awareness for the SRHS availability and eligibility criteria, in order for them to be utilised appropriately.

By improving the service delivery of SRHS through pharmacies, health providers can contribute to ensuring that people's sexual and reproductive health needs can continue to be addressed.

As evidenced in this thesis, pharmacies offer notable advantages over other health providers, and there is an opportunity to build on these. For example, convenience was found to be a key feature that made pharmacies ideal for the delivery of SRHS. Further, that no appointments needed to be made and that pharmacies have long opening times were perceived as further advantages of pharmacies over other health providers. Pharmacies can also provide both a consultation and the medication on a sexual and reproductive health services in a single visit, and this was also found to be a key strength of pharmacies over other health providers.

According to recent data, pharmacies in England carry out one million consultations a week, showing their strong contribution to the delivery of healthcare. The recommendations developed in this thesis through the mixed methods methodology, can now be taken forward to build on the strengths of pharmacies, to ensure that they can continue to provide stronger and more accessible sexual and reproductive health services in the future.

11. References

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12. Appendix

APPENDIX 1 RETROSPECTIVE QUANTITATIVE STUDY - JOURNAL PAPER COPY

Health services research

ORIGINAL RESEARCH

Utilisation of pharmacy-based sexual and reproductive health services: a quantitative retrospective study

Julia Gauly ,[1] Helen Atherton,[1] Peter K Kimani,[1] Jonathan Ross[2]

[1]Warwick Medical School, University of Warwick, Coventry, UK
[2]Whittall Street Clinic, University Hospital Birmingham, Birmingham, UK

Correspondence to
Julia Gauly, Warwick Medical School, University of Warwick, Coventry, UK; J.Gauly@warwick.ac.uk

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ABSTRACT

Objectives To explore the utilisation of pharmacy-based sexual and reproductive health services (SRHS) in order to optimise delivery and identify barriers to access.

Methods The health provider Umbrella offers six SRHS from over 120 pharmacies in Birmingham (England). In this retrospective study, data collected between August 2015 and August 2018 were used to analyse uptake, user characteristics and attendance patterns according to day of the week.

Results A total of 60 498 requests for a pharmacy service were included in the analysis. Emergency contraception (50.4%), condoms (33.1%) and STI self-sampling kits (9.6%) accounted for more than 90% of all requests. A lower uptake of services was observed for the contraceptive injection (0.6%), oral contraception (5.4%) and chlamydia treatment (1.0%). Services were most likely to be requested by those self-identifying as female (85.6%), and those aged 16–24 years (53.8%). Based on available ethnicity data (n=54 668), most requests for a service were made by White/White British individuals (43.4%) and Asian/Asian British people (23.1%). The largest number of services were delivered on Mondays (20.9%) and the lowest on Sundays (5.0%). A high proportion of requests for services on Saturdays (57.0%), Sundays (67.6%) and Mondays (54.4%) were made by females presenting for emergency contraception.

Conclusion The evaluation of healthcare utilisation is important to help refine and optimise the delivery of services. However, information relating to pharmacy-based SRHS is scarce and often limited to a single type of service provision. Overall, a wide range of pharmacy-based services were accessed by a diverse range of people, suggesting that pharmacies are a suitable provider of many SRHS. However, the routinely collected data analysed in the study had several limitations restricting the analysis. Sexual health providers should ensure they collect data which are as comprehensive as is possible in order to help understand the utilisation of services.

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INTRODUCTION

Cuts to National Health Service (NHS) sexual health budgets have led to the development of new service delivery pathways. Several countries including Australia, Canada, New Zealand and the USA have increasingly started to expand the use of pharmacies for healthcare delivery and the NHS in the UK has been at the forefront of expanding the role of pharmacy staff and services.[1] While pharmacies in England have been providing limited sexual and reproductive health services (SRHS) for several years,[2] primarily emergency contraception and chlamydia screening, they are now increasingly offering a wider variety of options, including the provision of: condoms, oral contraception, the contraceptive injection and screening/treatment for STIs.[3] When provided via an NHS sexual health provider, these services are all free of charge to the user.

It is important to evaluate the utilisation of healthcare services to optimise delivery and identify barriers to access.[4] However, to date, evidence on the utilisation of pharmacy-based SRHS is scarce and limited to single sexual health conditions or needs such as chlamydia screening and oral contraception.[5 6] This study is the first to analyse the utilisation of a large range of pharmacy-based SRHS using data collected over 3 years in Birmingham (England).

Our objectives were

- To describe the uptake of six SRHS encompassing contraception, and testing and treatment for STIs.
- To describe the characteristics of those using pharmacy-based SRHS.
- To describe the attendance patterns of individuals using pharmacy-based SRHS.

METHODS

Umbrella and their pharmacy-based SRHS

In August 2015, the sexual health provider in Birmingham (Umbrella)[7] started to offer services through many community pharmacies. The services are funded by Birmingham's local council and are free of charge to the user. Pharmacies which would like to provide Umbrella's services have to fulfil certain criteria including having a private consultation room. Overall, between August 2015 and August 2018, the number of community pharmacies in Birmingham (England) has decreased from 301 to 285.[8] Umbrella pharmacies can operate either at the 'Tier 1' level or the more comprehensive 'Tier 2' level. Between August 2015 and August 2018, the number of pharmacies offering more extensive Umbrella 'Tier 2' services increased from 18 to 47, whereas the number of 'Tier 1' pharmacies decreased from 158 to 80. Hence, the total number of Umbrella pharmacies delivering SRHS decreased from 176 pharmacies to 127 between August 2015

and August 2018. Pharmacies which decide to deliver the 'Tier 2' level have to undergo more comprehensive pharmacy staff training compared with 'Tier 1' pharmacies. Training for both 'Tier 1' and 'Tier 2' services is delivered by Umbrella's education team.

Both 'Tier 1' and 'Tier 2' pharmacies provide condoms, emergency contraception and STI self-sampling kits testing for chlamydia and gonorrhoea from available stock, which is dispensed directly to pharmacy users. While 'Tier 1' pharmacies can only provide women presenting for emergency contraception with one emergency contraceptive pill, 'Tier 2' pharmacies can provide women with two emergency contraceptive pills, one for immediate and one for future use (Advance EC). 'Tier 2' pharmacies also provide the contraceptive injection, oral contraception, chlamydia treatment and comprehensive STI self-sampling kits (testing for chlamydia, gonorrhoea, syphilis and HIV, plus hepatitis B for men who have sex with men) from in store stock provided directly to pharmacy users. 'Tier 1' pharmacies do not have those comprehensive STI self-sampling kits in stock. However, comprehensive STI self-sampling kit can be pre-ordered on the Umbrella website and be collected at an Umbrella pharmacy of their choice ('Tier 1' or 'Tier 2' pharmacy). The comprehensive STI self-sampling kits are the only service that can be pre-ordered on the Umbrella website.

An overview of Umbrella's pharmacy services and eligibility criteria is provided in table 1.

Study design

A retrospective analysis was performed to evaluate all SRHS requests made by users at Umbrella pharmacies between August 2015 and August 2018.

Data collection

Data were available from two data sources: pharmacy electronic patient records (PharmOutcomes) and online patient questionnaires (collected via the Umbrella website).

When people attended for emergency contraception, oral contraception, contraceptive injection, condoms or chlamydia treatment, they were seen in a consultation room by pharmacy staff, who recorded demographic and clinical information on an electronic patient record (PharmOutcomes). Those who wanted to pre-order an STI self-sampling kit via the Umbrella website had to complete an online questionnaire and then collect the STI self-sampling kit from an Umbrella pharmacy of their choice

Table 1 Overview of Umbrella's pharmacy services, eligibility criteria, data source and characteristics analysed for this study

SRHS provided	Pharmacy 'tier'	Eligibility by gender	Eligibility by age	Data source	Associated data included in this analysis
Emergency Contraception	Tier 1 and Tier 2	Females	13–60	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Advance Emergency Contraception	Tier 2	Females	13–60	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Referral or Appointment for the copper coil at closest sexual health clinic	Tier 1 and Tier 2	Females	13–60	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Oral Contraception	Tier 2	Females	13–60	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Contraceptive Injection	Tier 2	Females	13–60	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Condoms	Tier 1 and Tier 2	Females and males	≥13	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance
Collection of pre-ordered STI self-sampling kits testing for up to five STIs	Tier 1 and Tier 2	Females and males	≥16	Online Patient Questionnaire (Umbrella website)	► Age ► Gender ► Weekday of attendance
STI self-sampling kits testing for up to five STIs	Tier 2	Females and males	≥16	Pharmacy Electronic Patient Record (PharmOutcomes) Until 6 Feb 2018 and Pharmacy Online Patient Questionnaire (Umbrella website) from 7 Feb 2018 onwards	► Age ► Gender ► Weekday of attendance
Chlamydia and Gonorrhoea STI self-sampling kit supplied to women presenting for emergency contraception	Tier 1 and Tier 2	Females	15–24	Pharmacy Electronic Patient Record (PharmOutcomes) until 6 Feb 2018 and Online Patient Questionnaire (Umbrella Website) from 7 Feb 2018 onwards	► Age ► Gender ► Weekday of attendance
Chlamydia Treatment	Tier 2	Females and males	≥13	Pharmacy Electronic Patient Record (PharmOutcomes)	► Age ► Gender ► Ethnicity ► Weekday of attendance

SRHS, sexual and reproductive health services.

('Tier 1' or 'Tier 2' pharmacy). Data from individuals who were provided with an STI kit from a pharmacy without pre-ordering were collected in PharmOutcomes before 6 February 2018, and via the Umbrella website thereafter.

Each user of an Umbrella pharmacy service was automatically assigned a Patient Identification Number (ID). If a user returned to the same pharmacy to use the Umbrella service again, this was registered under the original patient ID. However, if a pharmacy user subsequently visited a different Umbrella pharmacy, this was recorded under a new patient ID. Hence, since users could have been recorded under different patient IDs it was not possible to evaluate frequency of attendance for individual patients.

If a pharmacy user used more than one of the 'Tier 1' or 'Tier 2' services (eg, emergency contraception and condoms), this was recorded as separate requests. It was therefore not possible to evaluate whether multiple services were delivered at a single attendance or over several pharmacy visits.

Service users self-assigned their demographic information: ethnicity, age and gender. When asked for their gender, users had the possibility to self-identify as female, male or transgender. Ethnicity data were collected consistently for all services except the STI self-sampling kits. Inconsistencies in the data collection meant that it was not possible to analyse ethnicity data on STI self-sampling kits, specifically no ethnicity data were collected until March 2017 and subsequently different ethnic group categories were used. Ethnicity data were therefore only analysed for individuals accessing emergency contraception, oral contraception, contraceptive injection, condoms and chlamydia treatment.

User activity recorded on PharmOutcomes and the STI website were combined into a single data set and re-coded where necessary. The data set included:

- PharmOutcomes data on all user requests recorded for emergency contraception, oral contraception, contraceptive injection, chlamydia treatment, condoms between August 2015 and August 2018.
- PharmOutcomes data (recorded between August 2015 and the sixth February 2018) and STI Website data (recorded between 7 February 2018 and August 2018) on all STI self-sampling kits that were provided directly to users
- STI Website data on all STI self-sampling kits that were ordered online and collected from a pharmacy between August 2015 and August 2018

An overview of the data sources and the characteristics analysed by SRHS is presented in table 1.

Inclusion criteria

Only those service records which met Umbrella's eligibility criteria outlined in table 1 were included in the analysis.

Data analysis

A descriptive analysis, count and percentage for categorical characteristics and range and median (IQR) for continuous characteristics, was conducted using IBM SPSS V.24 to evaluate:

- Uptake: the total number of requests for each SRHS.
- User characteristics: age, gender and ethnicity; age distribution by gender; ethnicity distribution by gender.
- Attendance pattern: the number of services provided by the pharmacy according to the day of the week and type of SRHS. For those users who pre-ordered an STI kit online, the weekday that the kit was collected rather than pre-ordered was analysed.

RESULTS

In total, 60 498 data entries were included in the analysis. An overview of the service uptake, service user demographics and attendance patterns by the day of the week is provided in table 2. Information on the age-distribution, ethnicity-distribution and weekday of service received by gender can be found in table 3.

Service use

Emergency Contraception (50.4%), condoms (33.1%) and STI self-sampling kits (9.6%) accounted for more than 90% of all service requests. The contraceptive injection was least frequently requested (0.6%), with oral contraception (5.4%) and chlamydia treatment (1.0%) also being used at relatively low levels.

Demographic characteristics

Gender

For the services available to all sexes, people recorded as female accounted for the majority of requests: condoms (females: 66.4% vs males: 33.1%), STI self-sampling kits (females: 69.4% vs males: 30.5%) and chlamydia treatment (females: 64.6% vs males: 34.9%). Fifteen people recorded as transgender used the service over the 3-year study period (<1%).

Age

People in the age group 16 to 24 years accounted for more than 50% of all requests. For all services consistently, females and males 16–24 years old accounted for the largest number of service requests. The median age across all services was 24 years (IQR 20–30). The median age was lowest for users who requested an STI kit (21 years old (IQR 20–27)) and highest for EC (25 years old (IQR 20–29)).

Ethnicity

As mentioned in the methods section, ethnicity data were not available for pharmacy users who requested an STI self-sampling kit (n=5830/60 498) due to inconsistencies in the data collection.

Based on data on the remaining 54 668 service requests, White/White British individuals were the largest group who accessed pharmacy services (43.3%), followed by Asian/Asian British (23.1%), Black/Black British (15.1%), mixed (6.4%) and other ethnic groups (2.0%).

Attendance patterns by day of week

All services except the contraceptive injection and chlamydia treatment were most frequently accessed on Monday, which was the most common day to present in a pharmacy for a SRHS overall (20.9%). The uptake of services on a Saturday (12.2%) and Sunday (5.0%) was lower. The majority of requests on Saturday (57.0%), Sunday (67.6%) and Monday (54.4%) were made by women presenting for emergency contraception. Females were most likely to request emergency contraceptive, condoms and STI self-sampling kits on Mondays, and chlamydia treatment and the contraceptive injection on Wednesday. In contrast, males were most likely to obtain condoms and chlamydia treatment on Fridays and STI self-sampling kits on Tuesdays.

DISCUSSION

Summary of the main findings

A large number of requests for sexual health related care delivered via pharmacies were made over a 3-year period. As might be expected, there was a higher level of provision for certain services (emergency contraception, condoms, STI self-sampling kits), which were available in all Umbrella pharmacies (between

Table 2 Uptake, user demographics and weekday of attendance of pharmacy-based sexual and reproductive health services

	Type of service								
						STI kit			
Characteristics	Service contacts	Emergency contraception	Oral contraception	Contraceptive injection	Condoms	Total	Provided directly (without pre-ordering)	Pre-ordered and collected	Chlamydia treatment
Total, n (% by row)	60 498* (100.0)	30 473 (50.4)	3247 (5.4)	359 (0.6)	19 998 (33.1)	5830 (9.6)	3324 (57.0)	2506 (43)	591 (1.0)
Gender, n (% by column)									
Females	51 780 (85.6)	30 464 (100)	3245 (99.9)	359 (100.0)	13 286 (66.4)	4044 (69.4)	2450 (60.6)	1594 (39.4)	382 (64.6)
Males	8597 (14.2)	–	–	–	6610 (33.1)	1781 (30.5)	869 (48.8)	912 (51.2)	206 (34.9)
Transgender	15 (0.0)	2 (0.0)	1 (0.0)	–	10 (0.1)	1 (0.0)	1 (100.0)	–	1 (0.2)
Unknown	106 (0.2)	7 (0.0)	1 (0.0)	–	92 (0.5)	4 (0.1)	4 (100.0)	–	2 (0.3)
Ethnicity, n (% by column)									
White/White British	23 742† (43.4)	12 383 (40.6)	1918 (59.1)	159 (44.3)	9003 (45.0)	NA	NA	NA	279 (47.2)
Asian/Asian British	12 603† (23.1)	7478 (24.5)	450 (13.9)	33 (9.2)	4612 (23.1)	NA	NA	NA	30 (5.1)
Black/Black British	8278† (15.1)	4964 (16.3)	427 (13.2)	67 (18.7)	2715 (13.6)	NA	NA	NA	105 (17.8)
Mixed/Multiple Ethnic groups	3490† (6.4)	2133 (7.0)	173 (5.3)	18 (5.0)	1109 (5.5)	NA	NA	NA	57 (9.6)
Other Ethnic groups	1078† (2.0%)	571 (1.9)	50 (1.5)	19 (5.3)	429 (2.1)	NA	NA	NA	9 (1.5)
Unknown	5477† (10.0)	2944 (9.7)	229 (7.1)	63 (17.5)	2130 (10.7)	NA	NA	NA	111 (18.8)
Age (years)									
Range (min–max)	13–86	13–59	13–56	16–49	13–86	16–78	16–78	16–72	16–54
Median (IQR)	24 (20–30)	25 (20–29)	24 (20–30)	25 (21–31)	24 (20–33)	22 (20–277)	21 (20–25)	24 (21–30)	23 (20–27)
Age groups, n (% by column)									
13–15	582 (1.0)	267 (0.9)	19 (0.6)	-	296 (1.5)	–	–	–	–
16–19	11 765 (19.4)	6223 (20.4)	542 (16.7)	43 (12.0)	3707 (18.5)	1130 (19.4)	735 (22.1)	395 (15.8)	120 (20.3)
20–24	20 834 (34.4)	10 740 (35.2)	1156 (35.6)	117 (32.6)	6025 (30.1)	2535 (43.5)	1638 (49.3)	897 (35.8)	261 (44.2)
25–29	11 061 (18.3)	6209 (20.4)	645 (19.9)	85 (23.7)	2961 (14.8)	1034 (17.7)	467 (14.0)	567 (22.6)	127 (21.5)
30–39	11 786 (19.5)	5715 (18.8)	608 (18.7)	84 (23.4)	4550 (22.8)	767 (13.2)	334 (10.0)	433 (17.3)	62 (10.5)
40+	4470 (7.4)	1319 (4.3)	277 (8.5)	30 (8.4)	2459 (12.3)	364 (6.2)	150 (4.5)	214 (8.5)	21 (3.6)
Day of week accessed, n (% by column)									
Monday	12 657 (20.9)	6894 (22.6)	599 (18.4)	46 (12.8)	3935 (19.7)	1102 (18.9)	645 (19.4)	457 (18.2)	81 (13.7)
Tuesday	10 249 (16.9)	4952 (16.3)	588 (18.1)	63 (17.5)	3515 (17.6)	1049 (18.0)	602 (18.1)	447 (17.8)	82 (13.9)
Wednesday	8999 (14.9)	4223 (13.9)	505 (15.6)	73 (20.3)	3268 (16.3)	828 (14.2)	449 (13.5)	379 (15.1)	102 (17.3)
Thursday	8970 (14.8)	4043 (13.3)	586 (18.0)	71 (19.8)	3325 (16.6)	844 (14.5)	445 (13.4)	399 (15.9)	101 (17.1)
Friday	9235 (15.3)	4120 (13.5)	591 (18.2)	63 (17.5)	3384 (16.9)	968 (16.6)	639 (19.2)	329 (13.1)	109 (18.4)
Saturday	7375 (12.2)	4206 (13.8)	293 (9.0)	37 (10.3)	2021 (10.1)	719 (12.3)	440 (13.2)	279 (11.1)	99 (16.8)
Sunday	3013 (5.0)	2035 (6.7)	85 (2.6)	6 (1.7)	550 (2.8)	320 (5.5)	104 (3.1)	216 (8.6)	17 (2.9)

*Only 75 requests (0.1%, 75/60 573) were excluded from the analysis because they did not meet the pharmacy service eligibility criteria.
†Total number of (%) of service requests of all services except STI self-sampling kits.
NA, not available.

Table 3 Distribution of age, ethnicity and weekday accessed by gender

Gender	Service	Age group	Frequency (%)	Ethnicity	Frequency (%)	Weekday of attendance	Frequency (%)
Females	Emergency contraception (n=30 464)	13–15	267 (0.9)	White/White British	12 380 (40.6)	Monday	6893 (22.6)
		16–19	6223 (20.4)	Asian/Asian British	7475 (24.5)	Tuesday	4951 (16.3)
		20–24	10 734 (35.2)	Black/Black British	4964 (16.3)	Wednesday	4223 (13.9)
		25–29	6208 (20.4)	Mixed/Multiple ethnic groups	2133 (7.0)	Thursday	4040 (13.3)
		30–39	5713 (18.8)	Other ethnic groups	571 (1.9)	Friday	4119 (13.5)
		40+	1319 (4.3)	Unknown	2941 (9.7)	Saturday	4203 (13.8)
						Sunday	2035 (6.7)
	Oral contraception (n=3245)	13–15	19 (0.6)	White/White British	1917 (59.1)	Monday	599 (18.5)
		16–19	541 (16.7)	Asian/Asian British	449 (13.8)	Tuesday	587 (18.1)
		20–24	1156 (35.6)	Black/Black British	427 (13.2)	Wednesday	505 (15.6)
		25–29	644 (19.8)	Mixed/Multiple ethnic groups	173 (5.3)	Thursday	585 (18.0)
		30–39	608 (18.7)	Other ethnic groups	50 (1.5)	Friday	591 (18.2)
		40+	277 (8.5)	Unknown	229 (7.1)	Saturday	293 (9.0)
						Sunday	85 (2.6)
	Contraceptive injection (n=359)	13–15	–	White/White British	159 (44.3)	Monday	46 (12.8)
		16–19	43 (12.0)	Asian/Asian British	33 (9.2)	Tuesday	63 (17.5)
		20–24	117 (32.6)	Black/Black British	67 (18.7)	Wednesday	73 (20.3)
		25–29	85 (23.7)	Mixed/Multiple ethnic groups	18 (5.0)	Thursday	71 (19.8)
		30–39	84 (23.4)	Other ethnic groups	19 (5.3)	Friday	63 (17.5)
		40+	30 (8.4)	Unknown	63 (17.5)	Saturday	37 (10.3)
						Sunday	6 (1.7)
	Condoms (n=13 286)	13–15	109 (0.8)	White/White British	6425 (48.4)	Monday	2777 (20.9)
		16–19	2427 (18.3)	Asian/Asian British	2923 (22.0)	Tuesday	2343 (17.6)
		20–24	4370 (32.9)	Black/Black British	1755 (13.2)	Wednesday	2145 (16.1)
		25–29	2227 (16.8)	Mixed/Multiple ethnic groups	825 (6.2)	Thursday	2122 (16.0)
		30–39	3132 (23.6)	Other ethnic groups	217 (1.6)	Friday	2083 (15.7)
		40+	1021 (7.7)	Unknown	1141 (8.6)	Saturday	1435 (10.8)
						Sunday	381 (2.9)
	STI self-sampling kits (n=4044)	13–15	–	White/White British	NA	Monday	779 (19.3)
		16–19	886 (21.9)	Asian/Asian British	NA	Tuesday	699 (17.3)
		20–24	1847 (45.7)	Black/Black British	NA	Wednesday	559 (13.8)
		25–29	656 (16.2)	Mixed/Multiple ethnic groups	NA	Thursday	578 (14.3)
		30–39	480 (11.9)	Other ethnic groups	NA	Friday	693 (17.1)
		40+	175 (4.3)	Unknown	NA	Saturday	513 (12.7)
						Sunday	223 (5.5)
	Chlamydia treatment (n=382)	13–15	–	White/White British	203 (53.1)	Monday	56 (14.7)
		16–19	96 (25.1)	Asian/Asian British	13 (3.4)	Tuesday	52 (13.6)
		20–24	179 (46.9)	Black/Black British	63 (16.5)	Wednesday	71 (18.6)
		25–29	73 (19.1)	Mixed/Multiple ethnic groups	39 (10.2)	Thursday	69 (18.1)
		30–39	27 (7.1)	Other ethnic groups	5 (1.3)	Friday	68 (17.8)
		40+	7 (1.8)	Unknown	59 (15.4)	Saturday	57 (14.9)
						Sunday	9 (2.4)
Males	Condoms (n=6610)	13–15	187 (2.8)	White/White British	2550 (38.6)	Monday	1146 (17.3)
		16–19	1261 (19.1)	Asian/Asian British	1670 (25.3)	Tuesday	1153 (17.4)
		20–24	1630 (24.7)	Black/Black British	951 (14.4)	Wednesday	1102 (16.7)
		25–29	730 (11.0)	Mixed/Multiple ethnic groups	283 (4.3)	Thursday	1189 (18.0)
		30–39	1373 (20.8)	Other ethnic groups	211 (3.2)	Friday	1277 (19.3)
		40+	1429 (21.6)	Unknown	945 (14.3)	Saturday	577 (8.7)
						Sunday	166 (2.5)
	STI self-sampling kits (n=1781)	13–15	–	White/White British	NA	Monday	323 (18.1)
		16–19	243 (13.6)	Asian/Asian British	NA	Tuesday	348 (19.5)
		20–24	686 (38.5)	Black/Black British	NA	Wednesday	268 (15.0)
		25–29	378 (21.2)	Mixed/Multiple ethnic groups	NA	Thursday	266 (14.9)
		30–39	285 (16.0)	Other ethnic groups	NA	Friday	274 (15.4)
		40+	189 (10.6)	Unknown	NA	Saturday	205 (11.5)
						Sunday	97 (5.4)

Continued

Table 3 Continued

Gender	Service	Age group	Frequency (%)	Ethnicity	Frequency (%)	Weekday of attendance	Frequency (%)
	Chlamydia treatment (n=206)	13–15	–	White/White British	76 (36.9)	Monday	25 (12.1)
		16–19	23 (11.2)	Asian/Asian British	16 (7.8)	Tuesday	30 (14.6)
		20–24	80 (38.8)	Black/Black British	42 (20.4)	Wednesday	30 (14.6)
		25–29	54 (26.2)	Mixed/Multiple ethnic groups	18 (8.7)	Thursday	32 (15.5)
		30–39	35 (17.0)	Other ethnic groups	4 (1.9)	Friday	41 (19.9)
		40+	14 (6.8)	Unknown	50 (24.3)	Saturday	40 (19.4)
						Sunday	8 (3.9)

*The distribution of age, ethnicity and weekday accessed was not provided for transgender people because the numbers for this group were too little.
NA, not available.

127 and 176 pharmacies between August 2015 and August 2018), compared with other services (oral contraception, contraceptive injection, chlamydia treatment) which were restricted to a limited number of pharmacies (between 18 and 47 pharmacies between August 2015 and August 2018).

Those self-identifying as female comprised the large majority of requests. Those between the ages of 16 and 24 accounted for more than 50% of requests. Most requests, for which ethnicity data were available, were made by those recorded as White/White British and Asian/Asian British. Monday was the most common day to present, whereas Saturday and Sunday were the days with lowest attendances. The majority of service requests occurring at the weekend and on Monday, were made by women presenting for emergency contraception.

Comparison with existing literature

Attendance patterns by gender varied and it was found that emergency contraception, condoms and STI self-sampling kits were most commonly requested on Mondays. It is likely that women requesting emergency contraception are also offered condoms and STI self-sampling kits by pharmacy staff when they attend. This would suggest that the concept of integrated services, where several services are provided in one visit, is working. Males appear to obtain condoms before the weekend, possibly because sexual intercourse is more likely to occur at the weekend.[9]

Our analysis found that pharmacy-based SRHS accessible to both sexes were used less frequently by those self identifying as male than female, which is consistent with previous studies that reported a lower proportion of males attending for STI testing in a community pharmacy setting.[6 10] This could indicate a barrier for male pharmacy-based SRHS access, possibly linked to the high proportion of female support staff in pharmacies.[11] Males report a preference for having a consultation with a male health provider[12] and having to approach female staff for SRHS might act as a deterrent.[13] However, males are generally less likely than females to attend for healthcare[14] and several studies have shown that males are also less likely than females to access STI testing in other settings, including primary care,[15] sexual health clinics[16] and commercial venues.[17] Males also have a lower uptake of self-sampling based STI testing,[18] and less frequently order STI kits online[16 19] or return STI kits sent to their homes.[20–22] This suggests that the reduced use of sexual health services observed in males is not specific to pharmacies and indicates a need for further research to investigate the reasons for this and how best to address it.[23]

We only analysed STI self-sampling kits that were provided through Umbrella pharmacies whereas a recent study analysed the utilisation of Umbrella's clinic-based STI testing and online STI self-sampling kits that were sent to people's homes or collected at the clinic. We found that only one transgender person was provided with an STI kit through the pharmacy over 3 years; in contrast, the online testing based study found 14 transgender people pre-ordered an STI kit to their home or to a clinic, and 26 transgender people were provided with STI screening at the clinic within a 6-month period.[16] A recent study found that community pharmacists felt that discrimination and lack of provider knowledge were identified as barriers to pharmacies for transgender people, and the low uptake of services by transgender people may support this finding.[24] However, it is also possible that transgender people may have been incorrectly recorded as female or male and therefore not have been captured in our data set.

Based on the available ethnicity data, ethnic groups using SRHS in pharmacies were represented approximately in proportion to their prevalence in the local population[25]—White/White British (census 57.9% cf. study population 43.4%), Asian/Asian British (census 23.7% cf. study population 23.1%), Black/Black British (census 7.2% cf. study population 15.1%), Mixed/Mixed British (census 4.4% cf. study population 2.0%) and other ethnic groups (census 6.7% cf. study population 5.8%). Black/Black British appeared to be over-represented in comparison with the local population, suggesting that pharmacies may reach those associated with potentially poor sexual health outcomes.[26] However, available data identified the number of service requests rather than the number of individual patients so this should be interpreted with caution.

Young people are particularly vulnerable to poor sexual health outcomes.[27] Our data showed that people in the age group from 16 to 24 years old made up the majority of service requests and indicates that pharmacies have the potential to reach young people who are in high need for SRHS. Further, a higher proportion of those attending for STI screening were aged 16–24 in pharmacies compared with sexual health clinic attendees (3365/5530 (62.9%)) cf. 9654/19193 (50%)),[16] suggesting that pharmacy-based STI testing is acceptable to this demographic.

In line with other studies, we found that the total number of emergency contraception requests was highest on Mondays and lowest on Sundays.[28 29] This may reflect difficulties in accessing pharmacies on Sundays, as a result of variable pharmacy hours, closure or unavailability of trained staff. According to data provided by Umbrella, the majority of Umbrella pharmacies (76.7%, 122/159) are closed on Sunday, suggesting that limited Sunday access was the reason for the low uptake of services. However, retrospective data on opening times are not available and these opening times may have differed in the past. Limited availability is a concern because emergency contraception is more effective when taken earlier after unprotected sex[28 29] suggesting that more research is required to explore the impact of limiting access.

Strengths and limitations

Although understanding healthcare utilisation is crucial to identify barriers to access, previous literature on the utilisation of pharmacy-based sexual health services is scarce and limited to the delivery of single sexual health services. This is the first study evaluating SRHS data collected over a prolonged period of time. A limitation of the study is that the uptake of services over time could not be analysed because the date of attendance was unavailable from the service provider. Another limitation of this study is that the findings are limited to a single health provider in Birmingham and relied on routinely collected data which limited the possible analyses. Missing data meant that the utilisation of STI self-sampling kits could not be described in terms of ethnicity and the lack of a reliable patient ID number prevented analysis at a patient level. Furthermore, transgender people might not have been identified as they may be recorded as female or male rather than transgender.

Our findings suggest that Umbrella's novel pharmacy service, which encompasses more than 120 pharmacies serving a population over 1 million people and including attendees from a wide range of ethnic backgrounds, can provide useful background information to those planning and delivering pharmacy services elsewhere.

Implications for practice and future research

Research into the reasons for variation in service uptake according to different days of the week would be useful to better understand why this occurs. This might include analysis of pharmacies' opening times and the time taken to access emergency contraception after intercourse.

Barriers to males accessing sexual health services and black people accessing pharmacy-based sexual health services also warrants further investigation. However, a main recommendation of this study is for sexual health providers to design systems which optimise efficient data collection to enable rigorous and comprehensive analysis. Data linkage to enable anonymised identification of sexual health service attendees across integrated sexual health services would allow an analysis of utilisation at the patient level and assist future evaluations. Further, accounting for both gender and sex in data collection would improve the quality analysis[30] and should also be considered. Finally, research on whether the type of person using pharmacy-based SRHS reflects how and where those services were advertised is needed to understand the effectiveness of reaching certain demographics by advertisement.

Key messages

- This retrospective study is the first to describe the utilisation of a large range of pharmacy-based SRHS.
- Further exploration of the impact of limited Sunday access is needed.
- Barriers to males accessing sexual health services and barriers to Black/Black British people using pharmacy-based services need to be explored.
- Data collection that allows comprehensive and rigorous analysis of the utilisation of pharmacy-based SRHS should be implemented by sexual health providers.

Handling editor Jason J Ong

Twitter Julia Gauly @julia_gauly

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Competing interests None declared.

Patient consent for publication Not required.

Ethics approval NHS REC and HRA approval (Rec Reference: 18/SC/0511), in addition to local NHS Trust approval (Ref number: RKK6366), was obtained prior to the study commencing.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplementary information. The anonymised data analysed in the current study are owned by Umbrella which is part of the University Hospitals Birmingham NHS Foundation Trust (funder of this study). Umbrella is licensed to use the data for any legitimate purpose in anonymised form.

ORCID iD

Julia Gauly http://orcid.org/0000-0002-7835-0882

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APPENDIX 2 SYSTEMATIC REVIEW PROTOCOL

NIHR | National Institute for Health Research

PROSPERO
International prospective register of systematic reviews

Evaluating the delivery of pharmacy-based sexual health services: a mixed methods systematic review

Julia Gauly, Jonathan Ross, Xavier Armoiry, Isobel Hall, Irekanmi Soda, Helen Atherton

Citation
Julia Gauly, Jonathan Ross, Xavier Armoiry, Isobel Hall, Irekanmi Soda, Helen Atherton. Evaluating the delivery of pharmacy-based sexual health services: a mixed methods systematic review. PROSPERO 2018 CRD42018106807 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42018106807

Review question

How do pharmacy users and pharmacy staff experience the delivery of pharmacy-based sexual health services?

Searches
The electronic databases MEDLINE (OvidSP), Embase (OvidSP), Web of Science, Popline, Scopus, PsycINFO, and the Cochrane Library will be searched for relevant literature.

The reference list of all review articles included in the systematic review will be screened.

The search terms will be adapted for each database. A combination of Medical Subject Headings (MeSH) and free text terms (.mp) which searches in title, abstract and keyword will be utilise. A .mp search will be used since it is slightly narrower than search all fields (.af).

Types of study to be included
Inclusion: Qualitative studies (e.g. Interviews, focus groups, ethnography), quantitative studies (e.g. RCTs, cross-sectional studies, cohort studies) and mixed methods studies after 2007 will be included in this review. Grey literature and dissertation theses will be included in this review. Only studies from countries which are members of the Organisation for Economic Cooperation and Development (OECD) will be included. No language restrictions will be made.

Exclusion: Any other study designs. Further, conference abstracts and proceedings as well as Poster presentations will be excluded from this review.

Condition or domain being studied
Delivery of pharmacy-based sexual health services.

Participants/population
Inclusion: Users of sexual health services in pharmacies, any staff (pharmacists, pharmacy technicians, pharmacy staff, pharmacy assistants) providing sexual health services in pharmacies.

Intervention(s), exposure(s)

Inclusion: Any study which examines the delivery of at least one of the following services:

- Condoms
- Emergency hormonal contraception (if prescribed or initiated in pharmacy)
- STI self-sampling or testing kits for Chlamydia, Gonorrhoea, Syphilis and/or HIV
- Chlamydia treatment

• Oral contraceptive pill

• Contraceptive injection

• Hepatitis B vaccine injection

• Partner notification for chlamydia, Expedited partner therapy, accelerated partner therapy, patient-delivered partner therapy, Standard Partner Therapy for chlamydia

Comparator(s)/control

Any sexual health service provider other than those pharmacy-based (including Primary Care, Secondary Care, Sexual Health Clinics) or no comparator group.

Context

This study will include studies which focus on the delivery of pharmacy services or compare the delivery of pharmacies' services to other sexual health providers.

Main outcome(s)

The outcome(s) of interest include elements of the outcomes listed in the framework of the Cochrane Effective Practice and Organisation of Care (EPOC) (EPOC, 2017).

• Service user outcomes (experience, barriers and enablers)

• Provider outcomes (e.g. experience; workload; work morale)

• Social outcomes (e.g. empowerment)

• Attitudes (service users', providers')

• Satisfaction (service users', providers')

* Measures of effect

Not applicable.

Additional outcome(s)

None.

* Measures of effect

Not applicable.

Data extraction (selection and coding)

After search completion, all references will be imported into 'EndNote' and will be deduplicated. All references will be screened at title/abstract level against eligibility criteria by at least two reviewers. Discrepancies will be resolved through discussion or a further reviewer. All papers meeting the inclusion criteria at abstract stage will then be screened at full text and exclusions will have to be justified. When no consensus can be reached between the reviewers, a further reviewer will be consulted. The study selection process will be described in a PRISMA flow chart. The reviewers will independently extract relevant data from all studies included using a data extraction form specifically developed for this systematic review. Discrepancies will be resolved through discussion or a further reviewer.

Risk of bias (quality) assessment

The Mixed Methods Appraisal Tool (MMAT) - Version 2018 (Hong, Pluye, Fábregues, et al) will be used for quality assessment. If the reviewers disagree over the risk of bias of an included study, this will be resolved by consulting with a further reviewer. The quality assessment will not be used to exclude studies from this review but to offer a context for the synthesised findings.

Strategy for data synthesis

A narrative synthesis will be conducted to summarise the evidence. Narrative synthesis has been chosen as strategy for data synthesis since the included studies will be heterogeneous in study design and outcomes. The findings will be presented via text and tables.

Analysis of subgroups or subsets

The narrative synthesis will be guided by presentation according to the following groupings of interest:

• Population Type (e.g. Pharmacy Users, Pharmacy Staff)

Although women and men of all age groups experience challenges addressing their sexual health (Gonsalves & Hindin, 2017), young people might be more susceptible due to financial, cultural and social factors or provider bias against youth access (Chandra-Mouli, McCarraher, Phillips, Williamson, & Hainsworth, 2014). To explore this, population type has been chosen as subgroup.

Contact details for further information

Julia Gauly
[redacted]

Organisational affiliation of the review

Warwick Medical School
University of Warwick
CV4 7AL
United Kingdom

Review team members and their organisational affiliations

Ms Julia Gauly. Division of Health Sciences, Warwick Medical School, University of Warwick
Professor Jonathan Ross. University Hospitals Birmingham NHS Foundation Trust
Dr Xavier Armoiry. Claude Bernard University Lyon 1
Ms Isobel Hall. Warwick Medical School
Ms Irekanmi Soda. Warwick Medical School
Dr Helen Atherton. Warwick Medical School

Type and method of review

Narrative synthesis, Service delivery, Systematic review

Anticipated or actual start date

17 September 2018

Anticipated completion date

30 April 2019

Funding sources/sponsors

University Hospitals Birmingham NHS Foundation Trust

Conflicts of interest

None known

Language

English

Country

England

Stage of review

Review Completed published

Details of final report/publication(s)

Gauly J, Ross J, Hall I, et al. Pharmacy-based sexual health services: a systematic review of experiences

and attitudes of pharmacy users and pharmacy staff. Sexually Transmitted Infections. 2019. 95:488-495. https://sti.bmj.com/content/95/7/488

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
Humans; Pharmaceutical Services; Pharmacies; Pharmacy; Sexual Health

Date of registration in PROSPERO
20 August 2018

Date of publication of this version
25 February 2020

Details of any existing review of the same topic by the same authors

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	Yes
Risk of bias (quality) assessment	Yes	Yes
Data analysis	Yes	Yes

Revision note
This review is completed now and the link to the publication was added.

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions
20 August 2018
09 January 2019
25 February 2020

APPENDIX 3 SYSTEMATIC REVIEW - JOURNAL PAPER COPY

Review

Pharmacy-based sexual health services: a systematic review of experiences and attitudes of pharmacy users and pharmacy staff

Julia Gauly,[1] Jonathan Ross,[2] Isobel Hall,[1] Irekanmi Soda,[1] Helen Atherton[1]

► Additional material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136sextrans-2019-054096).

[1]Warwick Medical School, Warwick University, Coventry, United Kingdom
[2]Department of Sexual Health and HIV, University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom

Correspondence to
Julia Gauly, Warwick Medical School, University of Warwick, Coventry CV4 7AL, UK; J.Gauly@warwick.ac.uk

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ABSTRACT

Background Pharmacies are increasingly providing services related to contraception and STIs. Identifying pharmacy staff' and users' experiences and attitudes relating to sexual health services is critical to understand users' needs and examining how pharmacy staff can most effectively contribute to patient-centred care. This systematic review aimed to examine pharmacy staff and pharmacy users' experiences and attitudes towards the delivery of a large range of sexual health services.

Methods Seven electronic databases and the reference lists of all included studies were searched in September 2018. Studies giving insight into pharmacy users' and pharmacy staff's experiences and attitudes towards the delivery of services related to contraception and STIs were included. The Mixed Methods Appraisal Tool was used to assess the quality of included studies and a narrative synthesis applied to analyse evidence.

Results Nineteen studies were included. Eleven studies looked at pharmacy staff, four at users and four at both groups. Users found services accessible and convenient and staff found service provision feasible. However, several barriers to service delivery were identified including lack of privacy for delivering services, lack of trained staff available to provide services and subjective judgements being made on who should be provided or offered a service.

Discussion Barriers to service delivery need to be addressed to allow pharmacies to deliver their full potential. Future research on pharmacy-based gonorrhoea and syphilis screening, and hepatitis B vaccination is needed.

PROSPERO registration number CRD42018106807.

INTRODUCTION

Worldwide, more than a million people acquire an STI daily[1] and around 44% (99.1 million) of all pregnancies in 2010–2014 were unintended.[2] Unintended pregnancies can cause worse health, economic and social outcomes for women[3 4] and STIs can have severe reproductive, sexual and maternal-child health consequences.[1] Hence, STIs and unintended pregnancies are major concerns[5 6] and the provision of sexual health services addressing STIs and unintended pregnancy are highly important.

Pharmacies have the potential to improve access to sexual health services by virtue of their numerous locations; and since industrialised countries face new challenges associated with rising costs and demand, limited financial resources and a shortage of human resources,[7 8] several countries have recently implemented policies to expand pharmacists' roles.[9] For example, pharmacists in England are now providing a range of public health services such as smoking cessation and services for drug misusers.[10 11] Furthermore, they are increasingly providing services such as contraception and the screening and treatment of STIs.

As a consequence of pharmacies' service expansion, the role of pharmacy staff is changing from drug dispenser to patient-centred care provider.[7 12] Examining pharmacy staff experiences and attitudes to sexual health services is critical to understand whether they deliver a consistent and high-quality service.[12] Furthermore, exploring pharmacy users' experiences and attitudes may identify training needs and improve service delivery.[7]

A recent systematic review focused on young people's experiences and found pharmacy-based sexual health services to be appealing to and used by this group, although some pharmacy staff created a barrier to service access or refused access.[13] Another review has explored the acceptability of and barriers to chlamydia testing and included both user and staff perspectives.[14] This review showed that chlamydia screening is feasible, accessible and convenient and that incentives can increase access to testing. Another review on pharmacy-based sexual health services looked at emergency contraception (EC) and found that women liked the service but had concerns about the advice provided on future contraception and STIs.[15] Previous reviews have focused particularly on EC and chlamydia screening.

Therefore, our review aimed to systematically summarise and critically appraise pharmacy users' and staff experiences and attitudes towards the delivery of a large range of pharmacy-based sexual health services.

METHODS

This review is reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting framework.[16] The PRISMA checklist can be found attached (see research checklist). The protocol was published in August 2018 on PROSPERO and is available from: https://bit.ly/2QIegjv

Inclusion and exclusion criteria

The review included qualitative studies (interviews, focus groups, ethnography), quantitative studies (randomised controlled trials (RCTs), cross-sectional studies, cohort studies) and mixed method studies.

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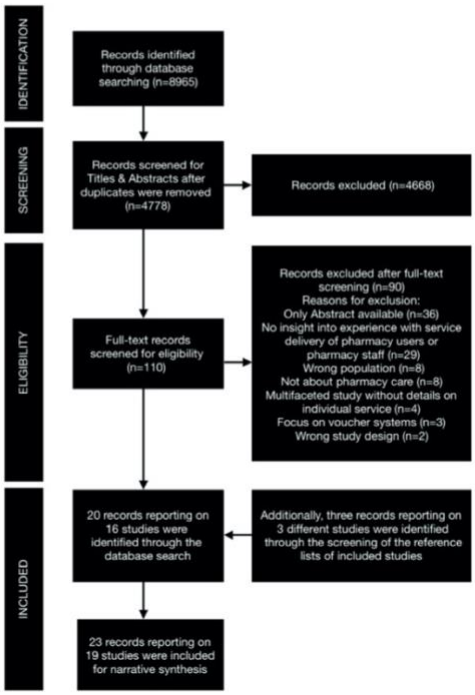

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram.

The population of interest was users and providers of pharmacy-based sexual health services. Only studies based in countries within the Organisation for Economic Co-operation and Development (OECD) were included. This was to ensure that results could inform current practice in OECD member countries. A wide range of pharmacy services were included in this review as being relevant to the research question.[17] These were: condoms, EC, chlamydia, gonorrhoea, syphilis and HIV screening, chlamydia treatment, contraceptive pill/oral contraceptives, contraceptive injection, hepatitis B vaccine and partner notification for chlamydia. Studies with and without a comparator group were eligible for inclusion. The outcome groupings of interest were broad to reflect the wide range of possible relevant outcomes for the review question.

The Cochrane Effective Practice and Organisation of Care outcome framework was used to categorise the outcomes of interest[18]: service user outcomes (eg, experience, barriers and enablers), provider outcomes (eg, experience, workload, work morale), social outcomes (eg, empowerment), attitudes (eg, service users', providers'), satisfaction (eg, service users', providers').

Search strategy

Cochrane, Embase, Medline, Popline, PsycINFO, Scopus and Web of Science and the reference lists of all included studies were searched without language restrictions on 17 September 2018. Only literature from the past 10 years was included[10] to ensure findings would inform current practice, which is consistent with previous reviews in the same field.[10 14]

The search strategy was informed by previous reviews in the field[13–15] and compiled by JG in collaboration with HA, JR and a librarian. The search was adapted for each database by mapping the keywords 'pharmacy/pharmacies' with terms associated with contraception and STIs. The search strategy used for Medline is presented in online supplementary appendix 1.

Selection of studies

All articles initially identified were deduplicated and the remaining titles and abstracts screened against the inclusion criteria by two researchers independently. Disagreements were resolved through discussion with another researcher. The full texts of potentially relevant articles were retrieved and dual screened against predefined criteria. If an article was excluded at this stage, the reason was recorded. Discrepancies between the reviewers were resolved by another researcher.

Data extraction

A data extraction sheet was developed and piloted. Data were extracted by two researchers independently, with agreement reached through discussion with a third reviewer if required. Outcomes were extracted according to our prespecified framework.

Quality assessment

The methodological quality of included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) V.2018,[19] which is designed for reviews where study designs are mixed and individual studies use mixed methods. The assessment was completed independently by two researchers and disagreements were resolved with another researcher. Studies were categorised as high, medium or low quality, depending on how many MMAT criteria were met. Quality assessment was used to provide context for the study findings.

Data synthesis

A narrative synthesis was conducted by JG in collaboration with HA and JR. Due to the methodological heterogeneity of included studies, conducting a statistical meta-analysis was not possible. Narrative synthesis allowed for the combination of qualitative and quantitative evidence through the comparison of similarities and differences between studies and is a method commonly used to synthesise data in systematic reviews.[20–23] Elements of guidance by Popay *et al* on the conduct of narrative synthesis were followed.[24]

The characteristics and key findings of studies were summarised and patterns across studies presented according to the population type. Next, factors offering explanations for relationships within and between studies were sought.

RESULTS

Literature search

Of 4778 articles identified in the literature database search, 110 were identified at title and abstract stage and the full text was screened. Of these, 16 studies met the inclusion criteria. A further three studies were identified through the screening of the reference lists of included studies. A total of 19 studies were included (figure 1).

Table 1 Characteristics and quality of included studies

Study	Study component(s) of interest	Setting	Type of intervention	Comparator	Relevant pharmacy population type	Quality
Black *et al*[35]	Survey	England	Emergency contraception	Yes (family planning clinic; GP)	Pharmacy users (n=50)	Low
Chaumont and Foster[43]	Interviews and survey	Canada	Emergency contraception	No	Pharmacists (survey: n=198; interviews: n=17)	High
Cooper *et al*[39]	Interviews	England	Emergency contraception	No	Pharmacists (n=23)	High
Dabrera *et al*[37]	Interviews	England	Chlamydia screening	No	Pharmacists (n=10)	Medium
Darin *et al*[26]	Survey	USA	HIV screening	No	Pharmacy users (n=69)	Low
Debattista[57] /Emmerton[58]	Interviews	Australia	Chlamydia screening	No	Pharmacists (not reported)	Low
Deeks[30] /Parker[31]	Interviews, focus groups and survey	Australia	Chlamydia screening	No	Pharmacy users (survey: n=945; interviews: n=18) and pharmacy healthcare assistants (survey: 20; focus group=10)	Medium
Downing *et al*[38]	Interviews and survey	Australia	Emergency contraception	No	Pharmacists (survey: n=34; interviews: not reported), non-pharmacists such as pharmacy healthcare assistants and pharmacy managers (survey: n=111; interview: not reported)	Low
Gudka *et al*[27 28]	Survey and focus groups	Australia	Chlamydia screening after emergency contraception	No	Pharmacy users (survey: n=91; focus group: n=5) and pharmacists (focus group: n=6)	High
Gudka *et al*[29]	Survey	Australia	Emergency contraception	No	Pharmacy users (n=113)	Medium
Heller *et al*[32]	Survey and interviews	Australia	Contraceptive injection	No	Pharmacy users (survey: n=50) and pharmacists (interviews: not reported)	Low
Hussainy *et al*[42]	Survey	Australia	Emergency contraception	No	Pharmacists (n=427)	High
Michie *et al*[33]	Interviews	Scotland	Oral contraception after emergency contraception	Yes (two types of pharmacy care; family planning clinic)	Pharmacy users (n=12) and pharmacists (n=10)	High
Ragland *et al*[34 35]	Survey	USA	Emergency contraception	Yes (women's clinic)	Pharmacy users (n=87)	High
Rodriguez *et al*[45]	Survey	USA	Hormonal contraception		Pharmacists (n=121)	Medium
Ryder *et al*[40]	Interviews	USA	Condoms	No	Pharmacists (n=5) and pharmacy healthcare assistants (n=4)	High
Thomas *et al*[36]	Interviews	New Zealand	Chlamydia screening after emergency contraception	Yes (schools; health and youth centres)	Pharmacists (n=12)	High
Whelan *et al*[41]	Survey	England	Emergency contraception	No	Pharmacists (n=422)	High
Wong *et al*[44]	Interviews	Canada	Copper IUD consultation as part of emergency contraception counselling	No	Pharmacists (n=20)	High

GP, general practitioner.

Description of included studies

Quantitative (n=7), qualitative (n=5) and mixed methods (n=7) studies looking at pharmacy staff (n=11), users (n=4) and both users and staff (n=4) were included. Interviews (n=11), surveys (n=12) and focus groups (n=2) gave insight into users' and staff' experiences and attitudes. The characteristics of included studies are presented in table 1. Studies reported on at least one of the following services: EC, oral contraception, contraceptive injection, chlamydia screening, HIV screening and condom distribution.

Two qualitative and two quantitative studies included a comparator group.

Quality of included studies

Ten studies were of high, five of low and four of medium quality. Most studies (n=18) had clear research questions and appropriate data collection methods (n=16). While most qualitative studies were of high quality, most quantitative studies had a high risk of non-response bias and most mixed methods studies failed

to adequately integrate results. The detailed quality assessment is attached as online supplementary file 1.

Experiences and attitudes of pharmacy users and staff

Pharmacy users

Three key areas of importance to pharmacy users were identified: suitability, privacy and counselling. The main findings are summarised in table 2.

Suitability

Users found pharmacies convenient, easy and quick to access and use. They liked that compared with other providers, no appointments needed to be organised.[25–33] However, a barrier to service delivery experienced by some users was that trained staff were not always available to provide the service.[32]

Privacy

All five studies evaluating 'privacy' did so in relation to EC or chlamydia screening. Users' perceptions of experience conflicted within and between studies: while some were not concerned and stated that privacy was something they liked about pharmacies, others had privacy concerns and were worried about being overheard at the counter.[25–31] In one study, 98.9% of users of clinical services such as family planning services and general practices (82/83) were satisfied with the level of privacy provided, a significantly lower percentage ($p \leq 0.001$) of pharmacy users (44%; 22/50) were satisfied.[25]

Counselling

With the exception of some younger individuals, pharmacy users generally had a positive counselling experience, felt comfortable discussing sexual health[26–35] and found that appropriate advice was provided.[26–28 30 31 33–35] However, in two quantitative studies, pharmacy users found counselling on EC less informative and satisfactory compared with users of other sexual health providers[25 34 35]: whereas 95% of users of clinical services (78/83) agreed that adequate advice on EC was provided, fewer pharmacy users (82%; 41/50) did so.[25] While both clinic users (86.6%; 100/116) and pharmacy users (81.4%; 71/87) were generally satisfied with the counselling, pharmacy users were slightly less satisfied than users of clinical services.[34 35]

Pharmacy staff

Five key areas were identified as being of importance in relation to pharmacy staff and three of these were the same as those important to pharmacy users: suitability, privacy and counselling. The two further areas identified were workload and impact. The main findings are summarised in table 2.

Suitability

Staff believed that pharmacies were well suited for the provision of sexual health services because of their large clientele, accessibility and convenience.[32 36–39] However, some staff thought that pharmacies might not be ideal for condom distribution[40] as they were not frequently used by young men, and that young men may be hesitant in approaching female pharmacy staff to request sexual health services.[40]

Privacy

While some pharmacy healthcare assistants generally thought that users appeared unconcerned about their privacy, most pharmacy staff felt that privacy was highly important to users requesting sexual health services.[30 31 37 38 41] Thus, staff preferred to discuss sexual health in private consultation rooms[27 28]; where none was available, they tried to counsel in private areas away from other users.[37 38 42]

Counselling

Staff were generally comfortable counselling users and tried to be youth-friendly and non-judgemental. Dealing with groups and asking sensitive questions were perceived as difficult.[27 28 30 31 36 38 40 43 44] According to staff, pharmacy users with the exception of young users and women counselled by male staff felt comfortable during counselling.[40 44] While staff agreed that side effects, dosages, efficacy and future contraception should be included in EC counselling, they had mixed views on the provision of counselling for STIs.[38 42] According to one study, fewer pharmacy users (28%; 14/50) than users of clinical services (90.4%; 75/83) reported receiving counselling for contraception after receiving EC.[25] Furthermore, staff tended not to dispense EC to a person requesting the service on behalf of someone else[38 42 43] and made subjective judgements on whom to provide or offer services such as EC and chlamydia screening. For example, some were likely to refuse EC to young people.[38 39 42] With regard to chlamydia screening, staff were sometimes hesitant to offer it to young users, those presenting for a non-sexual health services and users thought to be married or in a long-term relationship.[36 37]

Workload

Although staff found the provision of sexual health services feasible overall,[36 37 45] they admitted that the counselling and paperwork added to workload.[27 28 30 31 41 42] Some staff were concerned about long waiting times and that trained staff were not always available to provide services.[30 31 36 41]

Impact

Staff felt that the provision of sexual health services benefited their profession and improved their job satisfaction.[30–32 39 40 45] However, some staff felt conflicted in their roles as a healthcare professional and drug dispenser, feeling pressured to provide services quickly rather than thoroughly.[44]

DISCUSSION

Main findings

We aimed to examine pharmacy staff' and pharmacy users' attitudes and experiences of pharmacy-based sexual health services. The studies we identified indicate that pharmacy-based sexual health services are perceived as accessible and convenient to use by both pharmacy users and pharmacy staff. However, lack of availability of trained staff was perceived to be a barrier for some pharmacy users. Furthermore, some pharmacy users and staff had privacy concerns. With the exception of young users and women counselled by male staff, pharmacy users and staff were generally comfortable with the counselling offered. However, two quantitative studies comparing the satisfaction on EC counselling of pharmacy users and users of other service providers showed that pharmacy users were less satisfied with EC counselling than users of other service providers.

Most staff found the provision of sexual health services practically feasible, although some felt under time pressure, and questioned the suitability of pharmacies for condom distribution to young males.

Strengths and limitations

This review provides a timely overview of the literature relating to experiences of pharmacy-based sexual health services using

Table 2 Key findings of included studies

Study	Key findings
Qualitative studies	
Cooper[39]	► Some pharmacy staff were more likely give out EC to older users and were not willing to give EC to under 25s.
Dabrera[37]	► Pharmacists were supportive of pharmacy-based chlamydia screening and found service provision feasible. ► Some pharmacists were concerned about privacy outside of a consultation room. ► Pharmacists were concerned about approaching young people (under 16 years) and found it more challenging to offer STI screening to users attending for non-sexual health complaints.
Michie[33]	► Women used the pharmacy because they had difficulties accessing contraception elsewhere and did not want to plan an appointment ahead. ► Women felt that the information given to them about contraception was clear.
Ryder[40]	► According to pharmacists, young users were uncomfortable when requesting condoms. ► Pharmacy staff felt that dealing with groups of people together is problematic. ► Some pharmacy staff felt that young males do not use the pharmacy for condoms as the pharmacy might be seen as an intimidating environment due to having to talk to female staff.
Wong[44]	► Some pharmacists felt conflicted in their roles as a healthcare professional and a drug dispenser (pharmacists felt pressured by users to provide fast services rather than detailed counselling). ► Most pharmacists were comfortable during counselling and believed that users were also comfortable. ► Some pharmacists felt that women might feel uncomfortable being counselled by male pharmacists if there is not enough privacy provided; pharmacists felt that it is difficult to ask users sensitive questions.
Quantitative studies	
Black[25]	► 74% (37/50) pharmacy users and 83.1% (69/83) of users of clinical services found it easy to obtain EHC from the pharmacy (p=0.163). ► 98.9% (82/83) of clinic users compared with only 44% (22/50) of pharmacy users agreed that adequate privacy had been provided (p≤0.001). ► 95% (78/83) compared with 82% (41/50) of pharmacy users felt that adequate advice was provided (p=0.015). ► Only 28% (14/50) of pharmacy users compared with 90.4% (75/83) of clinic users reported that future contraception was discussed after accessing EC (p≤0.001).
Darin[26]	► Speed (22/52) and convenience (16/52) were the most favourable features of pharmacy users experience. ► Lack of privacy at check-in was something users (3 out of 15) did not like about the pharmacy, 'private' and 'confidential' was something that users (7 out of 52) liked about the pharmacy.
Gudka[29]	► Most women (69%; 73/113) found it very easy/easy to get to the pharmacy and felt very comfortable/comfortable discussing EC with the pharmacist. ► 48% (54/113) of women were unconcerned/very unconcerned about privacy in the pharmacy; 29% (33/113) were unconcerned/very unconcerned about privacy.
Hussainy[42]	► 59.7% (256/427) of pharmacists refused EC when the person presenting was not the person needing EC. ► 59.5% of pharmacists preferred to counsel on EC in an area of pharmacy where confidentiality could be assured or in a separate area away from other pharmacy users. ► Most pharmacists counselled on EC side effects (90.2%), dosage (91.8%), efficacy in relation to time since unprotected sexual intercourse (88.8%); 81.9% (345/421) of pharmacists felt that it is their role to counsel on regular contraception but only 54.5% (229/420) felt that pharmacists should counsel on STI.
Ragland *et al*[34 35]	► The majority of both clinic users (86.6%; 100/116) and pharmacy users (81.4%; 71/87) rated 'strongly agree' on being satisfied with counselling (p=0.523). ► Pharmacy users (mean±SD: 3.6±0.6) rated significantly lower (p=0.034) the statement that the counselling helped them understand EC use better than clinic users (mean±SD:3.8±0.4).
Rodriguez[45]	► 87.6% of (106/121) pharmacists felt comfortable during counselling.
Whelan[41]	► The factors interfering most with pharmacists' ability to provide EC were lack of privacy (46.1%; 195/422) and lack of staff (50.9%; 219/422).
Mixed methods studies	
Chaumont and Foster[43]	► 70.9% (134/189) of pharmacists were comfortable providing EC. ► For 23.3% (10/43) of pharmacists, the primary reason to refuse EC was that the person presenting was not the patient.
Debattista[57] (2017)/ Emmerton (2011)[58]	► While pharmacy staff were supportive of pharmacy-based chlamydia screening, some were concerned about the workload.
Deeks et al[30] /Parker[31] (2013)	► Pharmacy users were highly satisfied with chlamydia screening service and liked the accessibility, convenience and that there was no need to book an appointment or travel a long distance. ► A lack of privacy in the pharmacy was stated as a barrier by some participants. ► Some users were concerned about confidentiality and privacy (because of other people around; fear of being overheard). ► Most pharmacy users felt that appropriate advice was provided. ► While most users felt comfortable discussing chlamydia with pharmacy staff, a few young people felt uncomfortable. ► Pharmacy assistants felt that offering sexual health services increased their job satisfaction. ► Pharmacy assistants were anxious about longer waiting times for users due to offering chlamydia screening. ► Users presenting in groups were concerning to pharmacy staff.
Downing et al[38]	► Pharmacy staff were aware of the importance of privacy and tried to seek a quiet consultation area away from the counter/other customers, if no consultation room was available. ► Young age (65%; 28/43) and person presenting not being the patient needing EC (32%/ 14/43) were reasons for staff refusing EC provision. ► 85% of pharmacists (109/128) and 72% of non-pharmacist staff (271/295) agreed that advice on STI and future contraception should be provided after EC.

Continued

Table 2 Continued

Study	Key findings
Gudka *et al*[27 28]	► 87% (79/91) of pharmacy users stated in a survey that they were not concerned about privacy; however, in a later survey, almost half of the same participants stated that they experienced a lack of privacy and in a focus group, users said that they would not feel comfortable discussing sexual health at the counter and preferred a private consultation area. ► Pharmacy users liked that the service was convenient to use, and no appointments needed to be booked. ► Pharmacy users felt that pharmacists handled consultations professionally and provided clear and concise information. ► Pharmacists were supportive of service provision but found that paperwork and documenting of services was time consuming.
Heller et al[32]	► Although most pharmacy users had a positive experience with the service delivery, some experienced difficulties (no trained staff available in chain pharmacies). ► Pharmacy users found it easy to use the service and were supportive of pharmacy-based contraceptive injection. ► Pharmacists acknowledged that features of the pharmacy were appealing for users when compared with other providers and felt that the pharmacy was an appropriate place for contraceptive services.
Thomas et al[26]	► Pharmacists are concerned to offer screening to 'older' individuals because they might be in a long-term relationship and might feel offended by being offered the service. ► No pharmacists wanted to approach clients in long-term relationships, married people or people with children (pharmacists perceived ethnic minorities to be more likely to be married and faithful). ► Most pharmacists believed that pharmacies are well placed to deliver chlamydia screening because of their large clientele and felt that is was feasible within their practice; some pharmacists were concerned that increasing the use of locums could hinder service expansion since locums are often untrained.

EC, emergency contraception.

a systematic and robust approach. One potential limitation is that only studies published after 2007 and conducted in OECD member countries were included.

Removing these restrictions might have revealed a different picture; however, they ensured that our findings can inform current pharmacy practice in high-income countries. The included studies were of variable quality and were not always reported in line with study reporting frameworks, having missing data and risk of bias. This limited the conclusions that could be drawn from these studies within this review. Mystery shopper studies were excluded from this systematic review to capture experiences from 'real' pharmacy users only. Mystery shoppers who are not in need for the service arguably experience the delivery of services differently from people who are in real need of the sexual health service. However, these studies may have added more detail to the review.

Comparisons with existing literature

As identified in another recent review, we found that there is insufficient evidence on pharmacy-based syphilis screening,[46] and also on gonorrhoea screening and hepatitis B vaccination, as no study on these services met our inclusion criteria. Furthermore, our review included studies which reported on one or more sexual health services. However, since only three studies reported on two sexual health services which were offered as a package, research evaluating several pharmacy services being delivered as part of an integrated sexual health service is required.

In line with the existing literature, pharmacy-based sexual health services were perceived as acceptable, convenient and accessible, compared with other health providers.[13–15 46] However, staff sometimes created barriers to access through refusing EC to young users or not offering chlamydia screening. Several mystery shopper studies confirm that young users may be refused access to EC.[47–50] Young people are at particularly high risk for sexual ill-health and denying EC or not offering screening for STIs can have severe consequences, such as unwanted pregnancy and the spread of STIs.

Pharmacy users in two studies perceived EC counselling as less informative or satisfactory than users of other providers and one of the included studies showed that few pharmacy users were counselled on future contraception. Several mystery shopper studies have shown that counselling on side effects of EC, STIs and future contraception is often not provided.[47 51] Findings in this review suggest that time pressure and mixed views on the appropriateness of counselling in relation to STIs contribute to this and highlight the need for high-quality training which is reviewed regularly.

Pharmacy staff were concerned that men may be less comfortable when counselled by women.

Also that women prefer to be counselled by female staff is supported by one study in which almost half of all women wanted to be counselled by a woman.[52] Furthermore, staff believed that young males were not frequently using a pharmacy to obtain condoms, because they did not want to approach female staff.

This belief is in line with a study which found that young males between 16 and 17 years were less likely to access retail settings including pharmacies for condoms than older men between 18 and 34 years.[53]

In contrast to our review and another review on STI testing,[46] two previous reviews on pharmacy-based sexual health services did not identify privacy as being of concern to patients.[14 15] However, we found that privacy concerns were raised in several of our included studies both in relation to EC and STIs, whereas this was not the case for ongoing contraception. Similarly, one previous study on EC found that privacy was a concern,[54] whereas a study on regular oral contraception did not.[55] It is likely that the stigma around EC and STIs may cause users to be more sensitive about privacy.[56]

Implications for service delivery and future research

Our findings suggest that to further improve pharmacy-based sexual health services, more transparency is required on whether appropriate trained staff are available, and if female or male pharmacists are present in the pharmacy. This could help users to find a pharmacy that provides appropriate services where they can feel comfortable attending. Improvements to pharmacist training would help to increase pharmacy users' counselling satisfaction on EC. Finally, ensuring more privacy within a pharmacy setting might make people feel more comfortable and facilitate condom uptake in young men.

Consequently, areas that would benefit from future research include clarifying appropriate privacy requirements and counselling preferences for pharmacy users. These factors may influence uptake and use of sexual health services. Other areas for

exploration are how to increase pharmacies' appeal for young users' needs to be explored.

As only three studies identified included pharmacy healthcare assistants, who are the first contact to users, future research should evaluate their experiences. There is also an evidence gap relating to syphilis and gonorrhoea screening and hepatitis B vaccination, and research on pharmacy-based provision of these services is needed.

Key messages

- This systematic review is the first to examine pharmacy staff' and users' experiences and attitudes of a large range of pharmacy-based sexual health services.
- Users find pharmacies accessible and convenient to use, and staff find delivering sexual health services to be feasible within their practice.
- Barriers to service delivery include lack of privacy, limited availability of trained staff and subjective judgements being made on who should be offered specific services.

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Contributors JG, HA and JR planned and designed the systematic review and the systematic review protocol. XA provided feedback on the systematic review protocol. JG designed the literature search with support from HA, JR and SJ. JG carried out the literature search and deduplicated the records. JG, IH and IS screened records for their eligibility. Where no consensus could be reached, HA and JR made a decision on records' eligibility. JG, IH and IS conducted the quality assessment of all included records. Where no consensus could be reached, the study was discussed with Dr Helen Atherton and Professor Jonathan. The analysis and interpretation was conducted by JG with support by HA and JR, who also supported the write up and critical revision of the systematic review. The version to be published was approved by JG. JR, IH, IS and HA.

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APPENDIX 4 ELECTRONIC DATABASES – SEARCH TERMS

SEARCH TERMS - ELECTRONIC DATABASES
Embase
Database: Embase Classic+Embase <1947 to 2018 Week 38> Search Strategy: --- 1 Pharmacy.mp. or exp pharmacy/ (121392) 2 Pharmacies.mp. (17129) 3 1 or 2 (124739) 4 exp contraception/ or exp long-acting reversible contraception/ or exp barrier contraception/ or exp hormonal contraception/ or Contraception.mp. or exp oral contraception/ (173978) 5 Contraceptive.mp. or exp contraceptive agent/ (182698) 6 exp sexually transmitted disease/ or Sexually Transmitted Infection*.mp. (108345) 7 STI.mp. (15159) 8 STD.mp. (13576) 9 exp Chlamydia rapid test/ or exp Chlamydia trachomatis test kit/ or exp Chlamydia/ or Chlamydia.mp. (35825) 10 Gonorrhoea.mp. or exp gonorrhea/ (21929) 11 Syphilis.mp. or exp syphilis/ (45923) 12 HIV.mp. or exp Human immunodeficiency virus/ (389480) 13 rapid test.mp. or exp rapid test/ (12279) 14 (self-sampling test* or self-sampling kit*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word] (63) 15 Hepatitis B vaccine.mp. or exp hepatitis B vaccine/ (21082) 16 (Hepatitis B vaccination or Hepatitis B).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word] (150262) 17 Emergency Hormonal Contraception.mp. or exp emergency contraception/ (2787) 18 Morning after pill.mp. or exp postcoitus contraceptive agent/ (50221) 19 EHC.mp. (706) 20 Condom*.mp. or exp condom/ (28035) 21 exp sexual health/ or Sexual Health Service.mp. (13309) 22 contact tracing.mp. (1975) 23 Partner notification.mp. (1227) 24 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 (958793) 25 3 and 24 (4723)

Medline
Database: Ovid MEDLINE(R) <1946 to September Week 1 2018> Search Strategy: --- 1 pharmacy.mp. or exp PHARMACY/ (51805) 2 pharmacies.mp. or exp PHARMACIES/ (13208) 3 1 or 2 (56571) 4 Contraception.mp. or exp CONTRACEPTION, BARRIER/ or exp CONTRACEPTION/ or exp CONTRACEPTION BEHAVIOR/ or exp LONG-ACTING REVERSIBLE CONTRACEPTION/ (49292) 5 Contraceptive.mp. or exp Contraceptive Agents/ (90752) 6 Sexually Transmitted infection.mp. or exp Sexually Transmitted Diseases/ (321054) 7 STI.mp. (6936) 8 STD.mp. (8706) 9 Chlamydia.mp. or exp CHLAMYDIA INFECTIONS/ or exp CHLAMYDIA/ or exp CHLAMYDIA TRACHOMATIS/ (30567) 10 exp Gonorrhea/ or Gonorrhoea.mp. (14740) 11 Syphilis.mp. or exp SYPHILIS/ (32561) 12 Human Immunodeficiency Virus.mp. or exp HIV/ (139482) 13 rapid test.mp. (2579) 14 (self-sampling test* or self-sampling kit*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (41) 15 Hepatitis B vaccine.mp. or exp Hepatitis B Vaccines/ (9808) 16 (Hepatitis B vaccination or Hepatitis B).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (85547) 17 Emergency Hormonal Contraception.mp. (56) 18 Emergency Contraception.mp. or exp Contraception, Postcoital/ (2092) 19 (Morning after Pill or EHC).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (581) 20 exp CONDOMS/ or Condom*.mp. (19649) 21 (sexual health service or sexual health).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (6907) 22 Partner notification.mp. or exp Contact Tracing/ (4209) 23 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 (585340) 24 3 and 23 (1908)

PsycInfo

Database: PsycINFO <1806 to September Week 2 2018>
Search Strategy:
---
1 Pharmacy.mp. or exp PHARMACY/ (3774)
2 pharmacies.mp. (1229)
3 1 or 2 (4387)
4 Contraception.mp. or exp Birth Control/ (9933)
5 exp CONTRACEPTIVE DEVICES/ or exp Oral Contraceptives/ or Contraceptive.mp. (8436)
6 exp Sexually Transmitted Diseases/ or Sexually Transmitted Infection.mp. (43630)
7 STI.mp. (2589)
8 STD.mp. (2110)
9 Chlamydia.mp. (856)
10 exp Gonorrhea/ or Gonorrhoea.mp. (287)
11 Syphilis.mp. or exp SYPHILIS/ (1747)
12 Human Immunodeficiency VIrus.mp. or exp HIV/ (41236)
13 exp HIV Testing/ or Rapid test.mp. or exp Testing/ (131233)
14 (self-sampling kit* or self-sampling test*).mp. [mp=title, abstract, heading word, table of contents, key
concepts, original title, tests & measures] (2)
15 Hepatitis B vaccine.mp. (74)
16 (Hepatitis B vaccination or Hepatitis B).mp. [mp=title, abstract, heading word, table of contents, key concepts,
original title, tests & measures] (1121)
17 Emergency Contraception.mp. (247)
18 (Morning after pill or EHC or Emergency Hormonal Contraception).mp. [mp=title, abstract, heading word, table of
contents, key concepts, original title, tests & measures] (69)
19 exp CONDOMS/ or Condom*.mp. (9683)
20 Sexual health service.mp. (51)
21 sexual health.mp. (5297)
22 partner notification.mp. (188)
23 contact tracing.mp. (95)
24 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23
(189773)
25 3 and 24 (399)

Scopus

(TITLE-ABS-KEY (“Pharmacy” OR “Pharmacies”) AND TITLE-ABS-KEY (“Contraception” OR Contraceptive”) OR TITLE-ABS-KEY (“Sexually Transmitted Infection” OR SEXUALLY TRANSMITTED DISEASE” OR “STI” OR “STD”) OR TITLE-ABS-KEY (“Chlamydia” OR “Gonorrhoea” OR “Gonorrhea” OR “Syphilis” OR “HIV” OR “Human Immunodeficiency Virus”) OR TITLE-ABS-KEY (“Self-sampling test” OR “Self-sampling kit” OR “rapid test”) OR TITLE-ABS-KEY (“Hepatitis B vaccination” OR “Hepatitis B”) OR TITLE-ABS-KEY (“Emergency Hormonal Contraception” OR “Emergency Contraception” OR “EHC” OR “Morning After Pill”) OR TITEL ABS-KEY (“Condom” OR “sexual health” OR “sexual health service”) OR TITLE ABS-KEY (“Contact Tracing” OR “Partner notification”))

Web of Science

TS=(Pharmacy OR Pharmacies) AND TS=(Contraceptive OR Contraception OR "Sexually Transmitted Infection*" OR "Sexually Transmitted Disease*" OR STI OR STD OR Chlamydia OR Gonorrhoea OR gonorrhea OR Syphilis OR HIV OR "Human Immunodeficiency Virus" OR "Self-sampling kit*" OR "self-sampling test*" OR "Hepatitis B vaccine*" OR "Hepatitis B vaccination" OR "Hepatitis B" OR "Emergency Hormonal Contraception" OR "Emergency Contraception" OR EHC OR "Morning-After Pill" OR "Condom*" OR "Sexual health service*" OR "sexual health" OR "Partner notification" OR "contact tracing")

Cochrane Library

Search Name: Cochrane Library 17092018 1194 References
Last Saved: 17/09/2018 15:46:38
Comment: 1194 References (17092018 Cochrane Library)

ID	Search
#1	MeSH descriptor: [Pharmacies] explode all trees
#2	Pharmacy OR Pharmacies
#3	#1 OR #2
#4	MeSH descriptor: [Contraception] explode all trees
#5	Contraception OR Contraceptive
#6	MeSH descriptor: [Sexually Transmitted Diseases] 4 tree(s) exploded
#7	Sexually Transmitted Infection* OR Sexually Transmitted Disease OR STI OR STD
#8	MeSH descriptor: [Chlamydia] explode all trees
#9	Chlamydia
#10	MeSH descriptor: [Gonorrhea] 5 tree(s) exploded
#11	Gonorrhoea OR Gonorrhea
#12	Syphilis
#13	MeSH descriptor: [Syphilis] 6 tree(s) exploded
#14	MeSH descriptor: [HIV] explode all trees
#15	HIV OR Human Immunodeficiency Virus
#16	Self-sampling kit OR self-sampling test OR rapid test
#17	MeSH descriptor: [Hepatitis B Vaccines] explode all trees
#18	Hepatitis B vaccine OR Hepatitis B vaccination OR Hepatitis B
#19	MeSH descriptor: [Contraception, Postcoital] explode all trees
#20	Emergency Hormonal Contraception OR Emergency Contraception OR EHC OR Morning after pill
#21	MeSH descriptor: [Condoms] explode all trees
#22	Condom
#23	MeSH descriptor: [Sexual Health] explode all trees
#24	Sexual Health Service OR sexual Health
#25	MeSH descriptor: [Contact Tracing] explode all trees
#26	Partner notification OR Contact Tracing
#27	#4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26
#28	#3 AND #27

Popline

(Pharmacy or Pharmacies) AND (Contraception OR Sexually Transmitted Infection* OR Sexually Transmitted Disease* OR Contraceptive OR STI OR STD OR Chlamydia OR Gonorrhoea OR Gonorrhea OR Syphilis OR HIV OR Human Immunodeficiency Virus OR Self-sampling it OR Self-sampling test OR rapid test OR Hepatitis B vaccine OR Hepatitis B vaccination OR Hepatitis B OR Emergency Contraception OR EHC OR Morning after pill OR Condom* OR Sexual health service* OR Sexual health OR partner Notification OR Contact Tracing

APPENDIX 5 QUALITY ASSESMENT MMAT

Categorisation into High, Medium and Low Quality							
There are five MMAT-criteria each for qualitative and quantitative studies; and JG categorised studies as high, medium, or low quality if they met 4-5, 3, 1-2 criteria respectively. For mixed methods studies with 15 (or in one case 20) criteria, JG divided them into high, medium and low quality if they fulfilled 11-15 (12-20), 8-10 (9-12), 1-7 (1-8) criteria.							
Overview Quality Assessment (MMAT)							
Methodological Quality Criteria (Qualitative Studies)		**Cooper (2008)**	**Dabrera (2011)**	**Michie (2016)**	**Ryder (2015)**	**Wong (2017)**	
Screening Questions	*Are there clear research questions?*	Yes	Yes	Yes	Yes	Yes	
	Do the collected data allow to address the research questions?	Yes	Yes	Yes	Yes	Yes	
Criteria for qualitative studies	*1) Is the qualitative approach appropriate to answer the research question?*	Yes	Yes	Yes	Yes	Yes	
	2) Are the qualitative data collection methods adequate to address the research question?	Yes	No	Yes	Yes	Yes	
	3) Are the findings adequately derived from the data?	Yes	Yes	Yes	Yes	Yes	
	4) Is the interpretation of results sufficiently substantiated by data?	Yes	Yes	Yes	Yes	Yes	
	5) Is there coherence between qualitative data sources, collection, analysis and interpretation?	Yes	Not clear	Yes	Yes	Yes	
Quality Overall		High (5/5)	Medium (3/5)	High (5/5)	High (5/5)	High (5/5)	

Methodological Criteria (Quantitative Studies)		**Black (2008)**	**Darin (2015)**	**Gudka (2014)**	**Hussainy (2011)**	**Ragland (2015)**	**Rodriguez (2018)**	**Whelan (2013)**
Screening Questions	*Are there clear research questions?*	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Do the collected data allow to address the research questions?	Not clear	Not clear	Yes	Yes	Yes	Yes	Yes
Criteria for quantitative descriptive studies	*1) Is the sampling strategy relevant to address the research question?*	Not clear	No	Yes	Yes	Yes	Yes	Yes
	2) Is the sample representative of the target population?	Not clear	Not clear	Not clear	Yes	Not clear	Yes	Yes
	3) Are the measurements appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	4) Is the risk of nonresponse bias low? (acceptable response rate is 60% or above)	Not clear	Not clear	No	No	No	No	No
	5) Is the statistical analysis appropriate to answer the research question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quality Overall		Low (2/5)	Low (2/5)	Medium (3/5)	High (4/5)	Medium (3/5)	High (4/5)	High (4/5)

Methodological Criteria (Mixed Methods Studies)		**Chaumont (2017)**	**Debattista / Emmerton (2017/2011)**	**Deeks / Parker (2014/2013)**	**Downing (2011)**	**Gudka (2013/2009)**	**Heller (2017)**	**Thomas (2009)**
Screening Questions	*Are there clear research questions?*	Yes	Not clear	Yes	Yes	Yes	Yes	Yes
	Do the collected data allow to address the research questions?	Yes	Not clear	Yes	Yes	Yes	Yes	Yes
Criteria for the qualitative part of the study	*1) Is the qualitative approach appropriate to answer the research question?*	Yes	Not clear	Yes	Yes	Yes	Yes	Yes
	2) Are the qualitative data collection methods adequate to address the research question?	Yes	Not clear	Yes	Not clear	Yes	Yes	Yes
	3) Are the findings adequately derived from the data?	Yes	No	Yes	No	Yes	Not clear	Yes
	4) Is the interpretation of results sufficiently substantiated by data?	Yes	No	Yes	No	Yes	Not clear	Yes
	5) Is there coherence between qualitative data sources, collection, analysis and interpretation?	Yes	No	Yes	Not clear	Yes	Not clear	Not clear
Criteria for non-randomised controlled trials (if appropriate)	*1) Are the participants representative of the target population?*		Yes					
	2) Are measurements appropriate regarding both the outcome and intervention (or exposure)?		Yes					
	3) Are there complete outcome data? (80% or above)		No					

Methodological Criteria (Mixed Methods Studies)		**Chaumont (2017)**	**Debattista / Emmerton (2017/2011)**	**Deeks / Parker (2014/2013)**	**Downing (2011)**	**Gudka (2013/2009)**	**Heller (2017)**	**Thomas (2009)**
	4) Are the confounders accounted for in the design and analysis?		Not applicable					
	5) During the study period, is the intervention administered (or exposure occurred) as intended?		Not applicable					
Criteria for quantitative descriptive studies (if appropriate)	*1) Is the sampling strategy relevant to address the research question?*	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	2) Is the sample representative of the target population?	Yes	Not clear	Not clear	Not clear	Yes	Not clear	Yes
	3) Are the measurements appropriate?	Yes	Not clear	Yes	Yes	Yes	Not clear	Yes
	4) Is the risk of nonresponse bias low? (acceptable response rate is 60% or above)	No	No	No	No	No	No	Yes
	5) Is the statistical analysis appropriate to answer the research question?	Yes	Not clear	Yes	Not clear	Yes	Not clear	Yes
Criteria on the mixed methods study components	*1) Is there an adequate rationale for using a mixed methods design to address the research question?*	Yes	Not clear	Not clear	Yes	Yes	No	Not clear
	2) Are the different components of the study effectively integrated to answer the research question?	Not clear	Not clear	Yes	Not clear	No	No	Not clear

Methodological Criteria (Mixed Methods Studies)		**Chaumont (2017)**	**Debattista / Emmerton (2017/2011)**	**Deeks / Parker (2014/2013)**	**Downing (2011)**	**Gudka (2013/2009)**	**Heller (2017)**	**Thomas (2009)**
	3) Are the results adequately brought together into overall interpretations?	No	No	No	Not clear	No	No	Yes
	4) Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	Yes	No	Yes	No	Not clear	No	Yes
	5) Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	Yes	No	No	No	Yes	No	Not clear
Overall Quality		High (12/15	Low (3/20)	Medium (10/15)	Low (4/5)	High (11/15)	Low (3/15)	High (11/15)

APPENDIX 6 FLYER

WARWICK
MEDICAL SCHOOL

Do you want to contribute to improving pharmacy-based sexual health services by sharing your experiences and views?

We are looking for volunteers to participate in an interview research study and would like to hear from you.

Interviews take up to 60 minutes. You can choose whether you want to be interviewed in person or on the phone.

As a thank you for the time taken in participating you will receive a £10 shopping voucher.

Interested? Please email [redacted] or text/call [redacted] to find out more.

Please note: This flyer was given to you since you have recently used a sexual health service (morning after pill, testing for sexually transmitted infection, condoms, any type of contraception, Hepatitis B vaccine) at a pharmacy collaborating with the sexual health provider *Umbrella*.This study has obtained ethical approval from the NHS Research Ethics Committee. All your information will be handled confidentially.

WARWICK
THE UNIVERSITY OF WARWICK

umbrella
Birmingham and Solihull Sexual Health

Version 1.3 | Date · 10/04/ 2019
IRAS Project ID · 242876

WARWICK
MEDICAL SCHOOL

Are you providing sexual health services to pharmacy users? Do you want to contribute to improving pharmacy-based sexual health services by sharing your experiences and views?

We are looking for volunteers to participate in an interview research study and would like to hear from you.

Interviews take up to 60 minutes. You can choose whether you want be interviewed in person or on the phone.

As a thank you for the time taken in participating you will receive a £10 shopping voucher.

Interested? Please email [redacted] or call/text [redacted] to find out more.

Please note: You have been provided with this leaflet since you are working at a pharmacy in Birmingham collaborating with the sexual health provider *Umbrella*. This study has obtained ethical approval from the NHS Research Ethics Committee. All your information will be handled confidentially.

WARWICK
THE UNIVERSITY OF WARWICK

umbrella
Birmingham and Solihull Sexual Health

Version 1.3 | Date · 10/04/2019
IRAS Project ID · 242876

APPENDIX 7 INFORMATION SHEETS

WARWICK
THE UNIVERSITY OF WARWICK

PARTICIPANT INFORMATION SHEET I PHARMACY STAFF

Study Title: Evaluating pharmacy-based sexual health services in the UK

Investigator(s): Dr Helen Atherton; Prof Jonathan Ross; Julia Gauly

Introduction

You are invited to take part in a study. Before you decide, you need to understand why the study is being done and what it would involve for you. Please take the time to read the following information carefully. Talk to others about the study if you wish.

Part 1 tells you the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study.

Please ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

PART 1

What is the study about?

This study is part of a doctoral student study. The research team, consisting of doctoral student Julia Gauly and her supervisors Dr Helen Atherton and Prof Jonathan Ross are interested in how sexual health services in pharmacies might be best delivered. The aim of the study is to find out about the experiences and views of pharmacy staff on the sexual health services. The research team collaborates with Umbrella, the sexual health provider in the West Midlands, which is part of the University Hospital Birmingham NHS Foundation Trust. The sexual health services that Umbrella offers in pharmacies in Birmingham are paid for by the local authority Birmingham City Council (BCC).

Do I have to take part?

It is entirely up to you to decide. Julia Gauly will describe the study and talk you through this information sheet, which we will give you at least 12 to 24 hours before the interview is conducted. If you choose to participate, we will ask you to consent to taking part. If you choose a face-to-face interview, you will sign a consent form. If you choose a telephone interview, we will audio-record you giving consent. You will be free to withdraw up to two weeks after the interview, without giving a reason.

What would taking part involve?

Participating in the interview will take you up to 60 minutes. All interviews will be conducted by Julia Gauly and will be audio recorded.
If you decide to participate you can choose whether you would like to take part in a telephone interview or a face-to-face interview.

If you decide to take part in a telephone interview, Julia Gauly will call you at a scheduled time at your convenience. You should make sure that you will be in a quiet place where you can talk undisturbed for 60 minutes.

If you decide to take part in a face-to-face interview, Julia Gauly will meet you at Whittall Street Clinic in Birmingham (Whittall Street, B4 6DH) at a scheduled time at your convenience. The interview will take place in a private room.
Julia Gauly will first introduce herself and the study and will remind you that you can ask any questions. Afterwards, you will be whether you want to proceed with the study. If you say 'yes' we will then ask you to give your consent:

For a face-to-face interview, we will ask you to sign a consent form. For telephone interviews, we will ask you all the questions on the consent form for telephone interviews. Only if you answer all the questions with yes and indicate your name, will you be considered as having given consent for taking part. You giving consent will be audio-recorded.

During the interview Julia Gauly will ask you about your views and experiences on providing sexual health services offered by Umbrella. At the end of the interview, you will be asked for some personal information: Your age, gender, ethnicity, religion, number of years of role and in post.

We will then stop the recording. You will be asked if you would like to be provided with the study report via email.

What are the possible disadvantages, side effects, risks, and/or discomforts of taking part in this study?

Although the purpose of the interviews is not to explore sensitive or embarrassing topics since the focus of the interview is on your experience of and views on the delivery of provision of sexual health services, it is possible, when talking about sexual health services, that you might perceive this as embarrassing or uncomfortable.

If during the interview you disclose information that has criminal or safeguarding implications. I will share this information with the other investigators and will notify the relevant authority.

What are the possible benefits of taking part in this study?

Participants will receive no direct benefit from participating. Your participation will contribute to a better understanding of how pharmacy-based services are best delivered. This can help to optimise sexual health services for pharmacy staff.

Expenses and payments

As a thank you for the time taken in participating, you will be sent a shopping voucher worth £10 via email after the interview by study-coordinator Helen McGowan.If you decide to take part in a face-to-face interview, we will pay for your travel expenses. You will get an expense form to complete with a stamped addressed envelope.

What will happen when the study ends?

The audio recording of the interview will be shared with Appen, a professional external transcription service, which is approved by the University of Warwick, for the purposes of transcription. Then the data will be analysed and written up.

Will my taking part be kept confidential?

Yes. We will follow strict ethical and legal practice and all information about you will be handled confidentially. Further details are included in Part 2.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm that you might suffer will be addressed. Detailed information is given in Part 2.

This concludes Part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

Who is organising and funding the study?

The study is organised by Julia Gauly, a doctoral student at Warwick Medical School. The study is funded by the University Hospital Birmingham NHS Foundation Trust.

What will happen if I don't want to carry on being part of the study?

Participation in this study is entirely voluntary. Refusal to participate will not affect you in any way. Even If you have agreed to participate and given consent, you may withdraw from the study until up to two weeks after the interview and decline any further contact by study staff after you withdraw. If you wish to withdraw from the study, you should inform Julia Gauly up to two weeks after the interview.Julia Gauly will send you a confirmation via email that your data will be removed. Your data will be securely deleted and there will be no further contact.

What if there is a problem?

This study is covered by the University of Warwick's insurance and indemnity cover. If you have a problem, please contact the Chief Investigator of the study:

Dr Helen Atherton

Assistant Professor

WMS

Unit of Academic Primary Care

University of Warwick

Coventry

CV4 7AL

Tel: [redacted]

Email: [redacted]

Who should I contact if I wish to make a complaint?

Any complaint about the way you have been dealt with during the study or any possible harm you might have suffered will be addressed. Please address your complaint to the person below, who is a senior University of Warwick official entirely independent of this study:

Head of Research Governance

Research & Impact Services

University House

University of Warwick

Coventry

CV4 8UW

Tel: 024 76 522746

Email: researchgovernance@warwick.ac.uk

Will my taking part be kept confidential?

Yes. Every participant will be assigned with a unique participant number ensuring your anonymity. Direct quotes and personal information from you, which might be used in publications etc. will be anonymised so that you cannot be identified. Only members of the research team will be able to identify you. This is necessary so that we can identify your data and destroy it in case you should decide to withdraw from the study.
All data from the study will be stored for 10 years in accordance with the University's Records Retention Schedule.

The University of Warwick is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Warwick will keep identifiable information about you for 10 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible. You can find out more about how we use your information by contacting Dr Helen Atherton, the Chief Investigator.

The University of Warwick will use your name, and contact details to contact you about the research study where necessary, and make sure that relevant information about the study is recorded and to oversee the quality of the study. The only people in the University of Warwick who will have access to information that identified you will be the person conducting the research study and anyone who needs to audit the data collection process, should that be necessary. Your data will not be identifiable at the point of analysis and researchers will not be able to find out your name, or contact details when analysing data for the study. The University of Warwick will keep identifiable information about you from this study for 10 years after the study has finished.

What will happen to the results of the study?

As the research forms part of Julia Gauly's Doctor of Philosophy (PhD), the results will be published and disseminated as conference/ journal papers and as a thesis. The findings will also be presented to the sexual health service *Umbrella* and the *University Hospital Birmingham NHS Foundation Trust*. Further, a one-page briefing aimed at organisations putting sexual health services in place will be developed. You will be provided with the study results if you indicated at the end of the interview that you would like to receive these.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the NHS Research Ethics Committee (18/SC.0511) and the Health Research Authority.

Data Protection Privacy Notice

The data controller for this project will be the University of Warwick. The Information and Data Compliance Team at Warwick will provide oversight of activities involving the processing of personal data, and can be contacted via gdpr@warwick.ac.uk. The Data Protection Officer for the University of Warwick is Anjeli Bajaj.

Your personal data will be processed for the purposes outlined in this notice. The legal basis that would be used to process your personal data is Article 6(1b) a task in the public interest.

In addition to the legal basis for processing personal data, the University of Warwick must meet a further basis when processing special category data, including: racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, genetic data, biometric data, data concerning health, data concerning a natural person's sex life or sexual orientation. The basis for processing your special category personal data is Article 9(2j) processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

What if I want more information about the study?

If you have any questions about any aspect of the study, or your participation in it, not answered by this participant information leaflet, please contact:

Julia Gauly
Doctoral Researcher
WMS
Unit of Academic Primary Care
University of Warwick
CV4 7AL
M: [redacted]
E: [redacted]

Dr Helen Atherton
Assistant Professor
WMS
Unit of Academic Primary Care
University of Warwick
Coventry
CV4 7AL
Tel: [redacted]
Email: [redacted]

Prof Jonathan Ross
Consultant Physician, Clinical Academic Lead, Professor for Sexual Health and HIV
University Hospital Birmingham NHS Foundation Trust
Whittall Street Clinic
Birmingham
B4 6DH
Tel: [redacted]
E: [redacted]

Thank you for taking the time to read this participant information leaflet.

PARTICIPANT INFORMATION SHEET I PHARMACY USER

Study Title: Evaluating pharmacy-based sexual health services in the UK

Investigator(s): Dr Helen Atherton; Prof Jonathan Ross; Julia Gauly

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PART 1

What is the study about?

This study is part of a doctoral student study. The research team, consisting of doctoral student Julia Gauly and her supervisors Dr Helen Atherton and Prof Jonathan Ross are interested in how sexual health services in pharmacies might be best delivered. The aim of the study is to find out about the experiences and views of pharmacy users on the sexual health services. The research team collaborates with Umbrella, the sexual health provider in the West Midlands, which is part of the University Hospital Birmingham NHS Foundation Trust. The sexual health services that Umbrella offers in pharmacies in Birmingham are paid for by the local authority Birmingham City Council (BCC).

Do I have to take part?

It is entirely up to you to decide. Julia Gauly will describe the study and talk you through this information sheet, which we will give you at least 12 to 24 hours before the interview is conducted. If you choose to participate, we will ask you to consent to taking part. If you choose a face-to-face interview, you will sign a consent form. If you choose a telephone interview, we will audio-record you giving consent. You will be free to withdraw up to two week after the interview, without giving a reason.

What would taking part involve?

Participating in the interview will take you up to 60 minutes. All interviews will be conducted by Julia Gauly and will be audio recorded.
If you decide to participate you can choose whether you would like to take part in a telephone interview or a face-to-face interview.
If you decide to take part in a telephone interview, Julia Gauly will call you at a scheduled time at your convenience. You should make sure that you will be in a quiet place where you can talk undisturbed for 60 minutes.
If you decide to take part in a face-to-face interview, Julia Gauly will meet you at Whittall Stree Clinic (Whittall St, Birmingham B4 6DH) at a scheduled time at your convenience. The interview will take place in a private room.
Julia Gauly will first introduce herself and the study and will remind you that you can ask any questions. Afterwards, you will be whether you want to proceed with the study. If you say 'yes' we will then ask you to give your consent:

For a face-to-face interview, we will ask you to sign a consent form. For telephone interviews, we will ask you all the questions on the consent form for telephone interviews. Only if you answer all the questions with yes and indicate your name, will you be considered as having given consent for taking part. You giving consent will be audio-recorded.

During the interview Julia Gauly will ask you about your views and experiences on being provided with sexual health services offered by Umbrella. At the end of the interview, you will be asked for some personal information: Your age, gender, ethnicity, religion and the first half of your postcode.

We will then stop the recording. You will be asked if you would like to be provided with the study report via email.

What are the possible disadvantages, side effects, risks, and/or discomforts of taking part in this study?

Although the purpose of the interviews is not to explore sensitive or embarrassing topics since the focus of the interview is on your experience of and views on the delivery of provision of sexual health services, it is possible, when talking about sexual health services, that you might perceive this as embarrassing or uncomfortable.

If during the interview you disclose information that has criminal or safeguarding implications I will share this information with the other investigators and will notify the relevant authority.

What are the possible benefits of taking part in this study?

You will receive no direct benefit from participating.Your participation will contribute to a better understanding of how pharmacy-based services are best delivered. This can help to optimise sexual health services for pharmacy users.

Expenses and payments

As a thank you for the time taken in participating the study co-ordinator Helen Mc Gowan will send you a shopping voucher worth £10 via email after the interview. If you decide to take part in a face-to-face interview, we will pay for your travel expenses. You will get an expense form to complete with a stamped addressed envelope

What will happen when the study ends?

The audio recording of the interview will be shared with Appen, a professional external transcription service, which is approved by the University of Warwick, for the purposes of transcription. Then the data will be analysed and written up.

Will my taking part be kept confidential?

Yes. We will follow strict ethical and legal practice and all information about you will be handled confidentially. Further details are included in Part 2.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm that you might suffer will be addressed. Detailed information is given in Part 2.

This concludes Part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

Who is organising and funding the study?

The study is organised by Julia Gauly, a doctoral student at Warwick Medical School. The study is funded by the University Hospital Birmingham NHS Foundation Trust.

What will happen if I don't want to carry on being part of the study?

Participation in this study is entirely voluntary. Refusal to participate will not affect you in any way. Even If you have agreed to participate and given consent, you may withdraw from the study until up to two weeks after the interview and decline any further contact by study staff after you withdraw. If you wish to withdraw from the study, you should inform Julia Gauly up to two weeks after the interview.Withdrawal from the study will not affect your place in your organisation, usual care or any benefits to which they would otherwise be entitled. If you want to withdraw during the study, you will just have to tell me.
Julia Gauly will send you a confirmation via email that your data will be removed. Your data will be securely deleted and there will be no further contact.

What if there is a problem?

This study is covered by the University of Warwick's insurance and indemnity cover. If you have a problem, please contact the Chief Investigator of the study:

Dr Helen Atherton
Assistant Professor
WMS
Unit of Academic Primary Care

University of Warwick
Coventry
CV4 7AL
Tel: [redacted]
Email: [redacted]

Who should I contact if I wish to make a complaint?

Any complaint about the way you have been dealt with during the study or any possible harm you might have suffered will be addressed. Please address your complaint to the person below, who is a senior University of Warwick official entirely independent of this study:

Head of Research Governance
Research & Impact Services
University House
University of Warwick
Coventry
CV4 8UW
Tel: 024 76 522746
Email: researchgovernance@warwick.ac.uk

Will my taking part be kept confidential?

Yes. Every participant will be assigned with a unique participant number ensuring your anonymity. Direct quotes and personal information from you, which might be used in publications etc. will be anonymised so that you cannot be identified. Only members of the research team will be able to identify you. This is necessary so that we can identify your data and destroy it in case you should decide to withdraw from the study.

All data from the study will be stored for 10 years in accordance with the University's Records Retention Schedule.

The University of Warwick is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Warwick will keep identifiable information about you for 10 years after the study has finished.
Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible. You can find out more about how we use your information by contacting Dr Helen Atherton, the Chief Investigator.

The University of Warwick will use your name, and contact details to contact you about the research study where necessary, and make sure that relevant information about the study is recorded and to oversee the quality of the study. The only people in the University of Warwick who will have access to information that identified you will be the person conducting the research study and anyone who needs to audit the data collection process, should that be necessary.

Your data will not be identifiable at the point of analysis and researchers will not be able to find out your name, or contact details when analysing data for the study. The University of Warwick will keep identifiable information about you from this study for 10 years after the study has finished.

What will happen to the results of the study?

As the research forms part of Julia Gauly's Doctor of Philosophy (PhD), the results will be published and disseminated as conference/ journal papers and as a thesis. The findings will also be presented to the sexual health service *Umbrella* and the *University Hospital Birmingham NHS Foundation Trust*. Further, a one-page briefing aimed at organisations putting sexual health services in place will be developed. You will be provided with the study results if you indicated at the end of the interview that you would like to receive these.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the NHS Research Ethics Committee and the Health Research Authority.

Data Protection Privacy Notice

The data controller for this project will be the University of Warwick. The Information and Data Compliance Team at Warwick will provide oversight of activities involving the processing of personal data, and can be contacted via gdpr@warwick.ac.uk. The Data Protection Officer for the University of Warwick is Anjeli Bajaj. Your personal data will be processed for the purposes outlined in this notice. The legal basis that would be used to process your personal data is Article 6(1b) a task in the public interest.

In addition to the legal basis for processing personal data, the University of Warwick must meet a further basis when processing special category data, including: racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, genetic data, biometric data, data concerning health, data concerning a natural person's sex life or sexual orientation. The basis for processing your special category personal data is Article 9(2j) processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

What if I want more information about the study?

If you have any questions about any aspect of the study, or your participation in it, not answered by this participant information leaflet, please contact:

Julia Gauly
Doctoral Researcher
WMS
Unit of Academic Primary Care
University of Warwick
CV4 7AL
M: [redacted]
E: [redacted]

Dr Helen Atherton
Assistant Professor
WMS
Unit of Academic Primary Care
University of Warwick
Coventry
CV4 7AL
Tel: [redacted]
Email: [redacted]

Prof Jonathan Ross
Consultant Physician, Clinical Academic Lead, Professor for Sexual Health and HIV
University Hospital Birmingham NHS Foundation Trust
Whittall Street Clinic
Birmingham
B4 6DH
Tel: [redacted]
E: [redacted]

Thank you for taking the time to read this participant information leaflet.

APPENDIX 8 CONSENT FORM

Study Number: (242876)

Participant Identification Number for this project: (INSERT)

CONSENT FORM | TELEPHONE INTERVIEWS

Study Title: Evaluating pharmacy-based sexual health services in the UK **Name of Investigator(s)**: Julia Gauly (Warwick Medical School) ; Dr Helen Atherton (Warwick Medical School) ; Prof Jonathan Ross (University Hospital Birmingham NHS Foundation Trust)

Please answer with yes after each question if appropriate.

Can you confirm that you have read the information sheet dated (version 1.5; 19 February 2019) for this study?

1. Have you had the opportunity to consider the information, ask questions and have had these answered satisfactorily?
2. Do you understand that your participation is voluntary and that you are free to withdraw at any time without giving any reason, without my medical care or legal rights being affected?
3. Do you understand that your data collected during the study, will be looked at by individuals from Warwick Medical School (Julia Gauly and Dr Helen Atherton) or from the University Hospital NHS Foundation Trust (Prof Jonathan Ross)?
4. Do you give permission for these individuals to have access to your records?
5. Do you understand that all data from the study will be stored for 10 years in accordance with the University's Records Retention Schedule?
6. Do you understand that as part of the study's procedure your responses will be audio recorded?

NHS
Health Research Authority

7. Do you understand that direct quotes from your interview data may be used in anonymised form in any publications?

8. Do you understand that the information collected about you may be used to support other research in the future, and may be shared anonymously with other researchers?

9. Do you understand that the audio recordings will be shared with Appen, a professional external transcription service, which is approved by the University of Warwick, for the purposes of transcription?

10. Do you agree to take part in this study?

Could you please indicate your name for me?

Please, can you spell your name for me?

Today is the (name date).

APPENDIX 9 AMENDMENT LOG

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Study Title:	Pharmacy-based sexual health services in the UK: A mixed methods evaluation
Chief Investigator:	Dr Helen Atherton
Sponsor Internal Reference:	SC.40/17-18
Other reference numbers (e.g. EudraCT Number):	RRK6366 (Funder number)

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
1	18 December 2018						Change of research team (Dr Peter Kimani will replace Dr Matthew O'Connell since he is leaving Warwick Medical School)	Study Protocol v1.5	Study Protocol v1.4	19 December 2018		
	18 December 2018						Our Systematic Review found that asking participants for their religion provides relevant information on the delivery of sexual health services. We therefore would like additionally ask participants for their religion.	Face Sheet v1.3/ Participant Information Sheet – Pharmacy Staff v1.4 / Participant Information Sheet – Pharmacy Users v1.4	Face Sheet v1.2/ Participant Information Sheet – Pharmacy Staff v1.3 Participant Information Sheet – Pharmacy users v1.3	19 December 2018		
	18 December 2018						We noted that some documents were not updated in line with the latest agreements: The pharmacy agreement form	Study Protocol v1.5 / Information Sheet – Pharmacies v1.3 / Email v1.3	Study Protocol v1.4/ InformationSheet – Pharmacies v1.2 / Email v1.2	19 December 2018		

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							originally planned to use with pharmacies was replaced by using a SoA and SoE with pharmacies. That has been approved by Ethics. In line with this we have updated the study protocol, the information sheets for pharmacies and emails. No flyers will be sent to participating pharmacies, since no flyers addressed at pharmacies had been designed and approved by the ethics committee.					
	18th December 2018						In the emails prepared to aid recruitment we said we would	Study Protocol v1.5 / Emails v1.3	Study Protocol v1.4 / Emails v1.3	19 December 2018		

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							send flyers to pharmacies. However, in putting together the study we decided this was not necessary and these flyers were never created. We have taken any reference to this out of the documentation.					
2	16th January 2019						In line with advice from the REC committee, we decided that Julia Gauly (Co-investigator) will not be present in the pharmacies to recruit pharmacy users. However, we did not update the SoA for Pharmacies to reflect this.	SoA Pharmacies v1.1	SoA Pharmacies V1.0	Approved: 23 January 2019		

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
	16th January 2019						In line with advice from the REC committee, we decided that Julia Gauly (Co-investigator) will not be present in the pharmacies to recruit pharmacy users. However, we did not update the SoE for Pharmacies to reflect this.	SoE Pharmacies v1.1	SoE Pharmacies V1.0			
3	27th February 2019						Originally, it was planned that Julia Gauly would send out the vouchers to participants and claim the money for the vouchers from her funder. However, now the funder has transferred the money to Warwick Medical School which leads to a	Email v1.4 Participant information Sheet – Pharmacy Users v1.5; Participant Information Sheet – Pharmacy Staff v1.5; Study Protocol v1.6	Consent Form – Face to Face interviews V1.3 Consent Form – Telephone Interview v1.3 Email v1.3 Participant information Sheet – Pharmacy Users v1.4; Participant Information Sheet	Approved: 13 March 2019		

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							change in the process of sending out the flyers: Now Julia Gauly will send Helen Mc Gowan the email address and name of the recipient of the voucher once they have participated. Helen Mc Gowan will then send participants an email with the voucher code and the T&C. She will keep an Excel spreadsheet with the record to keep an overview of how many vouchers were used by any given time. We therefore wish to add Helen Mc Gowan, APC Research Projects		– Pharmacy Staff v1.4; Study Protocol v1.5			

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							Administrator and Acting Unit Co-ordinator at Warwick Medical School , as co-investigator to our research team and to reflect the change of the process in our application documents.					
4	10th April						We propose the following changes: We are now proposing a more proactive approach: Based on the quantitative data which we have received in line with our ethical approval, we want to identify a large range of	Flyer Pharmacy Staff v1.3 Invitation Letter 1.0 Poster 1.0 Emails 1.5 Flyers Pharmacy Users 1.3 IRAS Form Study Protocol 1.7	Flyer Pharmacy staff 1.2 Emails 1.4 Flyers Pharmacy Users 1.2 Study Protocol 1.6	Approved		

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							pharmacies in terms of demand and services offered then write to pharmacies directly to ask them whether they would like to participate in our study, following up with an email or phone call. In a qualitative study, sampling a wide range of pharmacies offering a wide range of services will ensure the validity of the research. Previously we obtained permission for pharmacy staff to hand out flyers to potential					

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

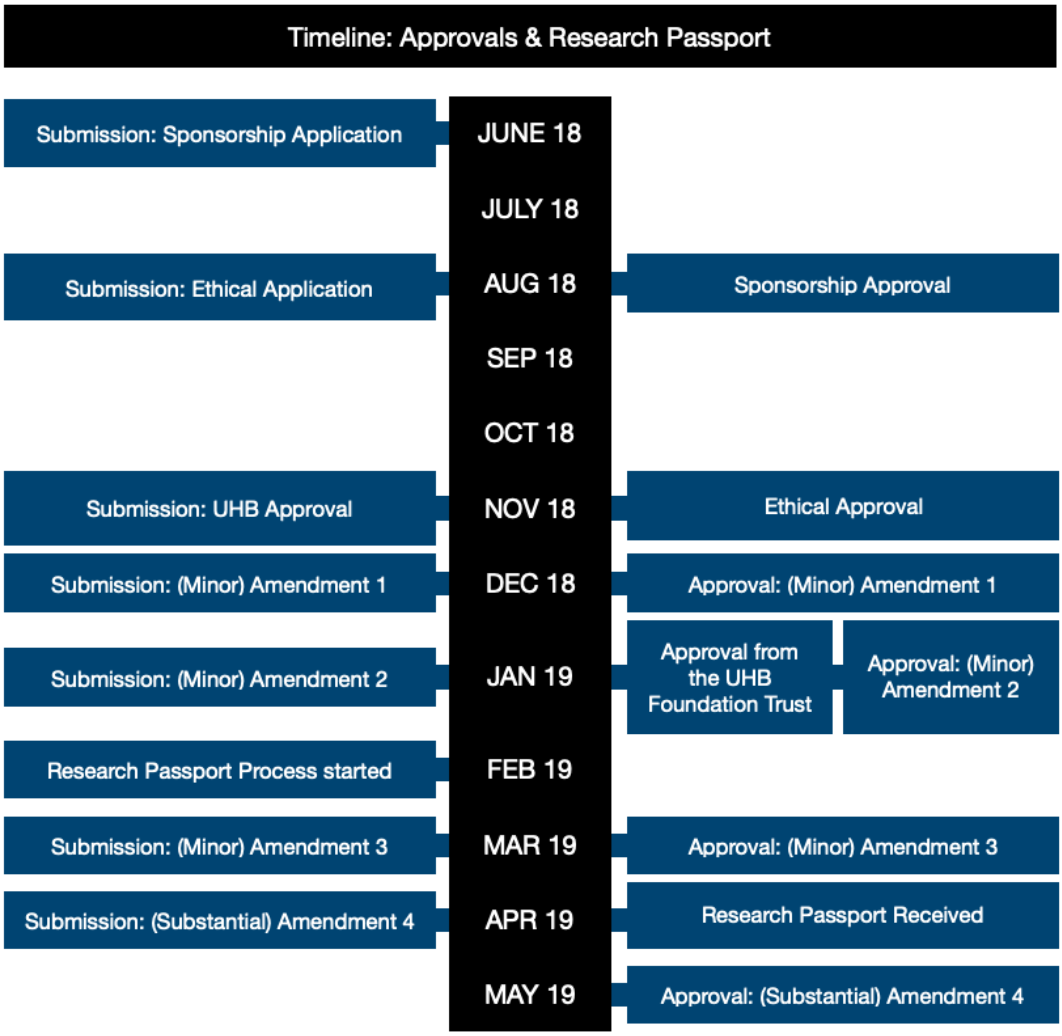
Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							participants. We would also like to place study posters in the pharmacies, as we recognise that pharmacy staff may not always remember to hand out flyers especially when busy. Recognising that we may still face barriers to recruiting pharmacies we also wish to invite other settings to collaborate with us by putting up a poster and placing flyers in their waiting rooms, specifically sexual health clinics and General Practices					

WARWICK UNIVERSITY

Substantial and Non-substantial Amendment Log

Amendment Number	Date Submitted	Where Submitted			Classification		Purpose of Amendment	Version/Date of Amended Documents		Date Approved (Substantial Amendments Only)		
		REC	MHRA	NHS/HSC	Substantial	Non Substantial		New	Old	REC	MHRA	NHS/ HSC
							in Birmingham. The reason for additionally putting posters and flyers into clinics and General Practices is that pharmacy users who used pharmacy services might also be attending there. Revised recruitment material will clarify that participants will receive a £10 shopping voucher as a thank you for participating in the study.					

APPENDIX 10 TIMELINE (ETHICAL) APPROVALS AND AMENDMENTS



APPENDIX 11 INTERVIEW TOPIC GUIDE

Interview Topic Guide for Pharmacists

Interviews will take up to one hour; Begin by: introducing myself and project, talking participant through information sheet, answering any questions, telling participant that withdrawal of study is possible at any point of the study; Ask whether participant wants to proceed; if yes, consent participant

1) **Since when have you been working as a pharmacist?** Since when are you providing sexual health services? How many sexual health services do you provide on average per month?

   Prompts to be used only if necessary:
   - Which pharmacy are you working at?

2) **Tell me what it is like to provide a sexual health service to someone?**

   Prompts to be used only if necessary:
- Are there any challenges you experience when with people who come for a sexual health service? What do you think would help to overcome the challenges?
- Do you feel confident when providing the services? Do you feel comfortable when providing the services?
- Do you feel you can ask pharmacy user all important questions? Are there any questions that are difficult for you to ask? Do you feel that pharmacy user tell you the truth? Do you feel pharmacy users trust what you are saying?
- Does it make a difference to you whether you provide service to a man/women? Do cultural differences between you and the participant matter?

3) **Do you think all the services you provide are well suited for pharmacy?**

   Prompts to be used only if necessary:
- Are there any sexual health services you think pharmacies should not provide?
- Can you think of any sexual health service you think pharmacies should provide?

4) **Can you think of any problems with the provision of sexual health services in pharmacies?**

   Prompts to be used only if necessary:

- Do you feel involved in decisions concerning the provision of sexual health services? Would you like to be more involved? How do you think about the collaboration with Umbrella?

5) **What are your thoughts on how and which kind of data is collected for provision of sexual health services?**

   Prompts to be used only if necessary:
- Is there anything you do not like about the data collection? Do you think there is any kind of information you should/should not collect? Can you think of anything, how data collection could be improved?

6) **Which impact does the provision of sexual health services have on you?**

Prompts to be used only if necessary:

- Does providing sexual health services cause you any stress/time pressure? Do you feel you have sufficient time to provide the services?

7) **How do you think about the training offered on sexual health services?**
PROMPTS:

- Do you think they are helpful for you to deliver the sexual health services?
- Is there something that you do not like about the trainings?
- Can you think of anything that could help improve the sexual health services?

8) **Do you have any further thoughts on the provision of sexual health services in pharmacies?**

- Can you think of anything how the delivery of sexual health services in pharmacies could be optimised?

End interview by: asking for information on the face sheet, asking whether participant would like to be provided with the full report (if yes, collect Email address); answering final questions; thanking participant for taking part in study;

Interview Topic Guide for Pharmacy Healthcare Assistants

- Interviews will take up to one hour
- Begin by: introducing myself and project, talking participant through information sheet, answering any questions, telling participant that withdrawal of study is possible at any point of the study
- Ask whether participant wants to proceed; if yes, consent participant

1) **Since when have you been working as a pharmacy healthcare assistant?** Since when are you providing sexual health services? How many sexual health services do you provide on average per month?

Prompts to be used only if necessary:
- At which pharmacy are you working?

2) **Tell me about your experience with providing sexual health services to pharmacy users?**

Prompts to be used only if necessary:

- Are there any challenges you experience with providing sexual health services? (Challenges in communication)
- Does it make a difference to you whether you provide the service to a man/women?
- Do you feel confident when providing the service? Do you feel comfortable when providing the service?
- What do you think could help overcome the challenges?
- Does providing the services cause you any stress/ time pressure?

3) **Tell me how you feel about providing sexual health services to pharmacy users?**

Prompts to be used only if necessary:
- Do you think there are more services that you as pharmacy healthcare assistant could provide?

4) **How do you think about the training on sexual health services?**

Prompts to be used only if necessary:
- Do you think the training helps you to provide services?
- Do you think the training should be compulsory?
- Is there anything you do not like about the training? What do you like the most/least about the training?

5) **How do you think about the data collection on the sexual health services?**

Prompts to be used only if necessary:
- Is there something you do not like about the data collection?
- How do you think could the data collection be improved?

6) **Can you think of any other problem related to the provision of sexual health services in pharmacies?** (Problem with pharmacists, pharmacy, Umbrella…)

Prompts to be used only if necessary:

- Is there any sexual health service you think pharmacies should (not) offer?
- Is there anything you can think of that would improve the delivery of sexual health services in pharmacies?
- Do you have any final thoughts on the provision of pharmacy-based sexual health services?

End interview by: asking for information using the face sheet, asking whether participant would like to be provided with the full report (if yes, collect Email address); answering final questions; thanking participant for taking part in study;

Interview Topic Guide for Pharmacy Users

- Interviews will take up to one hour
- Begin by: introducing myself and project, talking participant through information sheet, answering any questions, telling participant that withdrawal of study is possible at any point of the study; Ask whether participant wants to proceed; if yes, consent participant

1) **Can you tell me which service you have recently received at a pharmacy?**

Prompts to be used only if necessary:

- Was it the first time that you received this service? (If no, have you received this service at a pharmacy before? If no, where else?)
- Have you ever accessed the pharmacy for a sexual health service before?
- Have you obtained any SHS elsewhere before?
- Which pharmacy did you visit?

2) **Can you tell me why you decided to go to a pharmacy?**

Prompts to be used only if necessary:

- Did you choose pharmacy because it is close to your home/work/school; did you travel far to get to pharmacy?
- How did you know pharmacy offers this service (Did someone tell you? Did you look it up online?
- Did you think about going somewhere else to get advice/service?
- Was it visible to you that pharmacy was collaborating with Umbrella?

3) **Can you tell me about your thoughts on the way to the pharmacy?**

Prompts to be used only if necessary:

- Where you worried someone would see you in the pharmacy? Did you feel nervous or relaxed? Where you worried about how pharmacist would be like? Where you worried about your sexual health problem?

4) **Tell me about your experience at the pharmacy…**

Prompts to be used only if necessary:

- Were you talking to a pharmacist or pharmacy healthcare assistant? Do you think it is appropriate that PHA could provide service?
- Were you aware that it is a confidential service? Did pharmacy staff make confidentiality statement?
- Can you describe how you felt when asking pharmacy staff for the service? (Did you feel you had enough privacy? Were there people around you?)
- Were you taken into a consultation room?
- Can you describe your relationship to the pharmacist/pharmacy healthcare assistant? (Did you think he/she was competent or not/ friendly or not/ or judgemental or not)
- Did you feel you had enough privacy?

- Was the pharmacist female or male? Did it matter to you whether pharmacy staff is male/female? Do cultural differences between you and pharmacy staff play a role?
- Did you feel comfortable asking the pharmacist/pharmacy healthcare assistant any questions?
- Did you feel that the pharmacist/ PHA was competent to provide the service?
- Were you offered any other services? (if yes, did you accept them? If no, why not?)
- Did you talk to only one person in the pharmacy?
- Did you feel the pharmacist/pharmacy healthcare assistant had enough time for you?
- ***Was there anything you did not like about your experience at the pharmacy?***
- ***What did you like most/least about the pharmacy?***

5) **Can you tell me a bit about your reasons for going/not going to the pharmacy again to use the Umbrella service?**

- ***Prompts to be used only if necessary***
- If yes: would you go to exactly the same pharmacy again? (if no, why?)
- If no: where would you go?
- ***Can you think of anything that you would like to be improved by the pharmacies?***

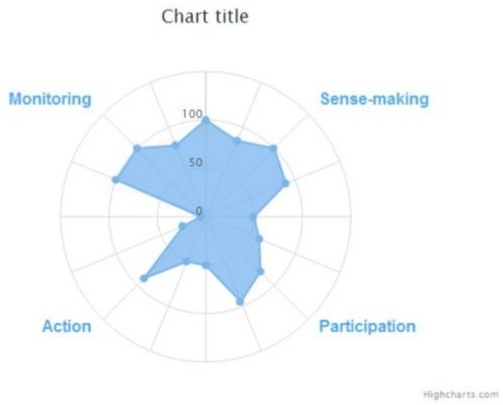
- End interview by: asking for information on the face sheet, asking whether participant would like to be provided with the full report (if yes, collect Email address); answering final questions; thanking participant for taking part in study;

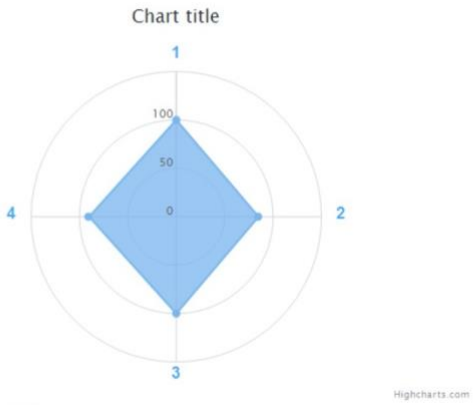
APPENDIX 12 NPT TOOLKIT RESULTS

NPT Toolkit Results

Results

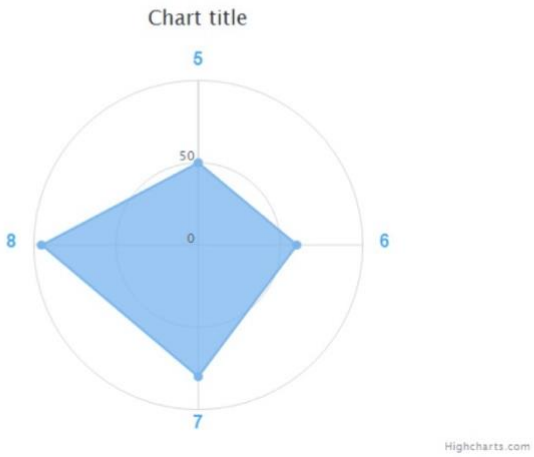
The Radar Plots show the strength that you have assigned to each variable. Use them as heuristic tools to think through an implementation or integration process.Positive responses extend further out from the centre than negative ones. Look for areas where the responses are closer to the centre.These may tell you that participants cannot make sense, or have not signed up to the innovation.Perhaps they cannot enact it in a way that works for them, or cannot assess its effects and their value.If the responses are positive, the opposite may be true.





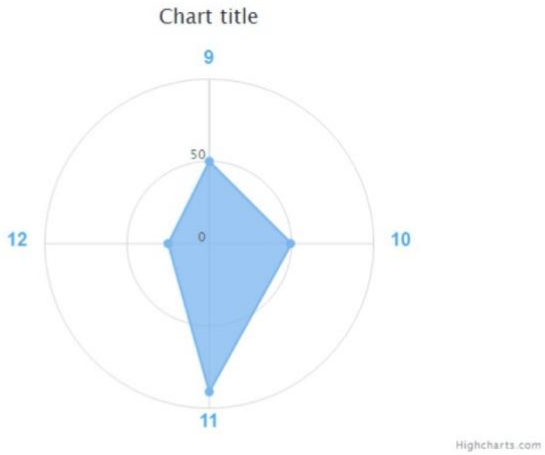
Sense-making

1. Participants distinguish the intervention from current ways of working.
2. Participants collectively agree about the purpose of the intervention.
3. Participants individually understand what the intervention requires of them.
4. Participants construct potential value of the intervention for their work.



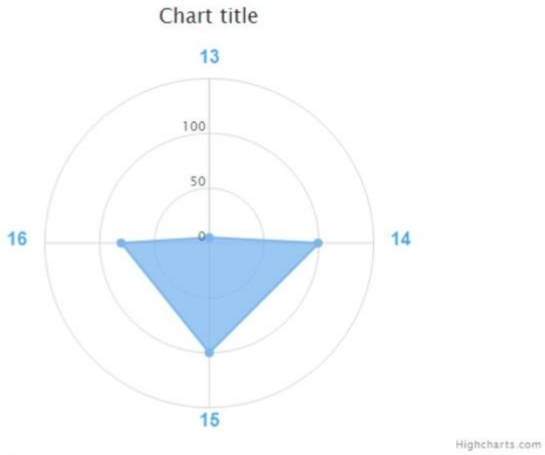
Participation

5. Key individuals drive the intervention forward.
6. Participants agree that the intervention should be part of their work.
7. Participants buy in to the intervention.
8. Participants continue to support the intervention.



Action

9. Participants perform the tasks required by the intervention.
10. Participants maintain their trust in each otherâ€™s work and expertise through the intervention.
11. The work of the intervention is appropriately allocated to participants.
12. The intervention is adequately supported by its host organization.



Monitoring

13. Participants access information about the effects of the intervention.
14. Participants collectively assess the intervention as worthwhile.
15. Participants individually assess the intervention as worthwhile.

16. Participants modify their work in response to their appraisal of the intervention.

For more information, see http://www.normalizationprocess.org

APPENDIX 13 JOINT DISPLAY

Joint Display			
Acronyms: PU= Pharmacy user(s); P(s)=Pharmacist(s); Ps= Pharmacists; PS= Pharmacy staff; PHA=Pharmacy Healthcare Assistant(s)			
Systematic Review Findings	**Qualitative Study Findings**	**Retrospective Study Findings**	**Pillar**
• PU found it easy to get to the pharmacy • PU liked that there was no need to travel long distance • PU found it easier to get to pharmacy than to a clinic • PU liked the speedy service delivery at the pharmacy • PU liked the walk-in nature of pharmacies (no need to schedule appointment) • PU liked that they could attend for several health issues in one visit • PU liked that they could get both consultation and medication in one visit • PS felt that pharmacies were convenient to use for people due to their greater accessibility, better opening hours and quicker appointments (compared to	• Convenience was most commonly named as reason why PU used the pharmacy • PU found pharmacies easy to get to from work/home; • Pu found pharmacies accessible as they had long opening hours and there was no need to schedule appointments	*60498 service requests were made between August 2015 and August 2018*	**Convenience of pharmacy-based SRHS**

other SRH providers)			
• PU experienced lack of trained staff as barrier to service • A few PS were concerned/anxious about not being able to meet demand due to lack of trained staff	• Not having trained staff at all times limited service availability • PHA stated that they often had to send people away as they didn't have trained pharmacist in pharmacy (this was sometimes frustrating for PHA and upsetting for PU presenting for time sensitive services)	*Not identified*	**Need for trained pharmacy staff**
• PU found it inconvenient that STI samples had to be returned to designated places, that they had to wait for test results and that they had to call the hospital during working hours to receive test results • PU felt comfortable with pharmacists conducting HIV rapid testing (there was no significant difference in comfort compared to clinic users)	• Many pharmacy users experienced difficulties in conducting the blood test for the STI self-sampling kits: PU found it difficult to fill the tube; PU felt that there were not enough lancets provided; dyslexic PU found it difficult to follow the instructions • Due to the difficulties with the self-sampling kits, some users left the kit uncompleted or decided to get tested at a clinic instead • PS were aware that PU had problems conducting the blood test and suggested that they could support the conduct of the blood sample in the pharmacy; this idea was welcomed by users	• *STI self-sampling kits accounted for only 9.6% of all service requests made between August 2015 and August 2018*	**Pharmacy-based STI testing**
• While some PU liked privacy about pharmacy and stated that privacy was not a concern for them, others experienced lack of privacy as a barrier to access	• Physical privacy (not being overheard or being overseen presenting for SRHS) was highly important to PU • Fear of stigma is a reason for high privacy requirements (PU are worried about being judged by staff	*Not identified*	**Need for physical privacy in the pharmacy**

• Some PU feared being surrounded by other PU • PU were less likely than clinical users to agree that adequate privacy had been provided • PS were aware that privacy was highly important to PU • Discreteness of PS enabled the service delivery • Having private consultation rooms helped Ps to interact with pharmacy users	and other pharmacy clients) • PU who entered emptier pharmacies had a better experience of privacy than those presenting in busy pharmacies • According to PS, some PU intentionally waited until the pharmacy was empty before entering the pharmacy for SRHS due to privacy concerns • PU tried to speak quietly at the counter for privacy reasons • Discreteness of staff impacted PU's perceived privacy • Queuing systems/ pharmacy outline impacted privacy: Parallel queues negatively impacted privacy; having a counter at separate area enabled privacy • PU intentionally visited pharmacies where they did not know staff and were unlikely to meet people that they knew • Discreet packaging of SRH products enabled privacy • Consultation rooms provided sufficient privacy during the service delivery (with the exception of one pharmacy user who complaint that the consultation room was not soundproof)		
• PU generally had a positive consultation experience (PS were described as friendly, nice, polite, kind, supporting, and understanding)	• PU largely had a positive experiences interacting with PS (PS were often described as friendly, sensitive) • However, a few users made negative experiences with PS who were: not	• *Only 15 people recorded as transgender people attended the pharmacy for SRHS between August 2015 and August 2018*	**Pharmacy Staff– user interaction**

• PU were largely comfortable discussing sexual health with PS (with the exception of younger users) • PU felt that PS were professional and provided information clearly • PS were aware that whether they were trained, confident and friendly had an impact on the interaction with PU • PS were generally comfortable interacting with PU • While PS felt that some young users seemed quiet/nervous during the consultation, others seemed comfortable • PU felt that appropriate advice was provided • The consultation at the pharmacy was perceived as less comprehensive than at clinic • PU were less likely to agree than clinic users that consultation helped them to understand EC use better in the future • Pharmacy staff were concerned about providing SRHS to minors without parental consent • Staff were less likely to deliver EC to young users and women that were not those in need for the service	respectful of the users' choices; less confident; judgemental; stigmatising PU; discriminating PU (in the case of one transgender woman, who suggested that PS should have to obtain diversity training) • PS were aware that being confident is highly important and some PS wished that they had more role playing in the training to make them more confident when delivering services		

• PS found it difficult to ask PU for their weight • PS felt that administrative work should be simplified and digitalised • Some PU did not want to share their personal information	• While some PU felt that all information requested by PS was relevant, others felt uncomfortable having to provide personal information for privacy reasons and were not sure why the questions were being asked • While some PU were more willing to provide details after Ps had reassured them of the confidentiality of the serivces, others, and particularly young people, remained reluctant • According to PS, some PU chose to buy EC rather than get the free *Umbrella* service because they did not want to provide their personal information • Ps were aware of how uncomfortable some PU were with the data collection and suggested to anonymise data collected as much as possible • Some Ps were already not asking for PU's name although this was against the policy • Ps believed that PU did not want their data to be shared with other health providers; however, some PU actually wanted their data to be shared with other health providers so that they did not have to answer questions in pharmacy again	*Not identified*	**Collection and use of personal information**
• PU had mixed experiences with PS providing the contraceptive injection: Some	• One pharmacy described that she had a positive experience being provided with the	• *The contraceptive injection was the least accessed services*	**Pharmacist-assisted Contraceptive Injection**

users were concerned about pharmacy staff skills and some users reported that it took the pharmacist several attempts in some cases it took pharmacists several times before providing the injection appropriately	contraceptive injection by the pharmacist		
• Some PS questioned whether pharmacies were the right place for condom distribution as they were used less by young males	*Not identified*	• *Males accessed pharmacy-based SRHS that were accessible for both males and females less frequently than females*	**Uptake of pharmacy-based SRHS by males**
• Some pharmacy staff noted that pharmacy users had a preference regarding the sex of pharmacy staff (e.g. young males did not want to be counselled by female staff whereas women seemed less comfortable with male staff)	• Many PU had preferences regarding the sex of PU • Several females expressed that they preferred to be counselled by a female • For one PU interviewed not having staff of preferred sex was a barrier to access • According to PS, some female PU specifically asked to be delivered a service by a female • According to PS, they let female PHA chaperone consultations and let them convince females to get a consultation by a male pharmacist • Same sex delivery was important, particularly to females, one male PU preferred to be counselled by a woman because he was attracted to men	*Not identified*	**Preferences regarding the sex of pharmacy staff**

	• Ps felt there should be more transparency on whether a male or female pharmacist were working in pharmacy		
• The majority of PS felt that the delivery of SRHS was feasible within their practice • Consultation and administrative work added workload for PS • The service delivery was more difficult when the demand was higher (particularly on the weekends and in the evenings) • Some PS felt pressured by users to deliver services fast rather than thorough	• Staff collectively agreed that the consultation and the collection of personal information added to their workload; Ps were more affected by the added workload than PHA • One P suggested to let pharmacy users pre-register themselves prior to the consultation in order to use consultation time more effectively • Ps felt it that it took too much time to collect data for some services such as condoms • PS felt that PHA should be able to record services electronically rather than on paper forms; having to enter the data collected by PHA on PharmOutcomes® duplicated work for Ps • Some Ps were already letting PHA enter data electronically on PharmOutcomes® although they were not supposed to • Ps felt that there was sometimes time pressure because the *Umbrella* services were only one of the jobs that they needed to complete; Ps sometimes found it difficult to multitask; PU did not like it when Ps were multitasking during the consultation	• *Overall, less services were requested on the weekend; however, the service requests on the weekend where driven by requests for EC which require a comprehensive consultation*	**Pharmacy staff workload**

	• Workload was not associated with the level of services provided (Tier 1 or 2) but with staffing levels; low levels of staff made it more difficult to provide services and in one case prevented a pharmacist from delivering the more comprehensive Tier 2 service level; The delivery of services was difficult where there was only PHA and one P in the pharmacy; even more difficult was it, when Ps were alone in the pharmacy and no one was there to cover the counter • Ps felt that having more staff would be helpful but were aware that this was not possible due to financial constrains • Some PS felt that shifting workload to PHA could take pressure of the P; however, Ps felt that some things had to be done by a P; Ps also felt that PHA were not paid enough/qualified enough to provide a larger range of services; however most PHA were willing to take on a larger role • Some Ps felt it was not feasible for them to take on additional services		
• Most pharmacists were willing to take on extra workload as part of their routine work and deliver SRHS • Pharmacy staff liked contributing to freeing up	• PS were generally highly motivated to deliver services and positive about *Umbrella* • PS were happy to take on a bigger role and felt it increased their job satisfaction	*Not identified*	**Pharmacy staff motivation and recognition**

doctors' time, increasing access to SRHS and helping to reduce unintended pregnancy • PS felt that delivering services enhanced their profession and aided them in developing their professional role as primary health providers • PHA expected to get financial recognition for their added workload	• PS felt grateful to be able to help other people by offering services; PS liked to take pressure of the healthcare system; PS felt that delivering SRHS increased their employability • PS felt that they did not get sufficient financial recognition for going beyond their traditional role • While Ps felt they did get recognition for their work from PU, PHA felt that PU did not perceive them as healthcare professionals and trusted them less than the pharmacist • PU stated they trusted Ps; however, one PU stated that she felt reassured that the pharmacists' qualifications were hanging in the consultation room • PHA felt that wearing an *Umbrella* badge made them more approachable to users as it showed that they could provide information • PHA wanted more recognition from users and financial recognition for attending the *Umbrella* training • PS felt that they should get more recognition from health providers for their work, e.g. by being asked for feedback and being involved in decisions on pharmacy-based SRHS • Pharmacist felt that annual awards for staff made staff feel appreciated for their work		

• Having documents such as the protocol for EC only in English was found to create a language barrier	• Many pharmacists experienced difficulties delivering services to people who were not fluent in English • Ps tried to use Google translate/Google images to communicate services to PU but sometimes they had to refer PU to clinic due to communication/language barriers • PS felt that having information leaflets in different languages may be helpful; however, only with PU who could read	*Not identified*	**Communication and language barriers between pharmacy staff and users**
Not identified	• PU and PS felt that lack of awareness for the range of services created a barrier to services • PS from smaller pharmacies felt that they were being overlooked by PU • PU and PS felt that there should be more advertisement for the services • Even PU who had used Umbrella service were not fully aware which services *Umbrella* was offering, where and for whom (e.g. age, gender) • PS described that men presented for EC and were upset when they couldn't get it for their female partners; staff felt that it should be more transparent who was eligible to receive services • One PU was wrongly charged for an *Umbrella* service by a PHA who believed that *Umbrella* services were only free for certain demographics	• *EC and condoms were the most requested services*	**Awareness of pharmacy-based SRHS**

	• PU described difficulties when trying to find an *Umbrella* pharmacy offering the services they needed; PU felt that information was not updated; PU were therefore calling the pharmacy in advance to find out whether service is available and trained staff present to provide service)		
Not identified	• Ps appreciated that *Umbrella* has a clinical advice line but sometimes experienced difficulties to get through the line • Ps reported that there were not sufficient clinical appointments available for women wishing to get the copper coil (and those appointments available sometimes did not suit the PU) • Ps felt that it was impractical that they needed to call the clinics to arrange appointment as they did not have direct access to the appointment system but	• *Less than 1% of women presenting for emergency contraception, were provided with a copper coil referral /appointment*	**Clinical support for pharmacies delivering SRHS**
Not identified	*Not identified*	• More than 50% of all services requests were made by 16-24-year olds (median age: 24) • The median age was lowest for STI self-sampling kit users (median age: 21) and highest for users of EC (median age: 25)	**Uptake of pharmacy-based SRHS by age**
Not identified	*Not identified*	• White/White British individuals were the largest group who	**Uptake of pharmacy-based SRHS by ethnicity**

		access pharmacy services, followed by Asian/Asian British, Black/Black British, Mixed and other ethnic groups	
Not identified	*Not identified*	• Monday was the most common day to present for pharmacy-based SRHS • All services except the contraceptive injection and chlamydia treatment were most frequently requested on Monday • The uptake of services was lowest on Sunday • Females were most likely to request emergency contraception, condoms and STI self-sampling kits on Mondays, and chlamydia treatment on Fridays • Males were most likely to obtain condoms and chlamydia treatment on Fridays and STI self-sampling kits on Tuesdays	**Uptake of pharmacy-based SRHS by the day of the week**
Not identified	*Not identified*	• Most pharmacy users presenting for chlamydia treatment were provided doxycycline (rather than azithromycin) • Most pharmacy users presenting for condoms were not	**Consultation Outcomes of pharmacy-based chlamydia treatment and condoms**

		provided with condom instructions	